

STATE OF NEW YORK

DEPARTMENT OF AGRICULTURE

TWENTY-FIRST ANNUAL REPORT

OF THE

Department of Agriculture

For the Year Ending September 30, 1913

PART III

TRANSMITTED TO THE LEGISLATURE JANUARY 15, 1914

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STATE OF NEW YORK

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JANUARY 15, 1914.

TWENTY-FIRST ANNUAL REPORT

OF THE

DEPARTMENT OF AGRICULTURE

PART III

To the Honorable the Legislature of the State of New York:

Pursuant to the provisions of the Agricultural Law, I herewith submit this, Part II of the Twenty-first Annual Report of the Department of Agriculture of the State of New York, for the year ending September 30, 1913.

CALVIN J. HUSON,

Commissioner of Agriculture

January 15, 1914.

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STATE OF NEW YORK
DEPARTMENT OF AGRICULTURE

CALVIN J. HUSON, Commissioner

Bulletin 45

PROCEEDINGS

OF THE

THIRTY-SIXTH ANNUAL CONVENTION

OF THE

New York State Dairymen's Association

HELD AT

SYRACUSE

DECEMBER 10-13, 1912

Compiled by the Secretary
W. E. GRIFFITH
Madrid, N. Y.

OFFICERS OF THE ASSOCIATION, 1913

<i>President</i>	E. H. DOLLAR.....	Heuvelton, N. Y.
<i>Vice-President</i>	H. C. ELWOOD.....	Buffalo, N. Y.
<i>Secretary</i>	W. E. GRIFFITH.....	Madrid, N. Y.
<i>Assistant Secretary</i>	H. E. JONES.....	Syracuse, N. Y.
<i>Treasurer</i>	R. R. KIRKLAND.....	Philadelphia, N. Y.

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W. N. GILES.....	Skaneateles, N. Y.
H. C. LANGE.....	New York City.
W. A. STOCKING, JR.....	Ithaca, N. Y.

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<i>President</i>	E. H. DOLLAR.....	Heuvelton, N. Y.
<i>Vice-President</i>	H. C. ELWOOD.....	Buffalo, N. Y.
<i>Secretary</i>	W. E. GRIFFITH.....	Madrid, N. Y.
<i>Assistant Secretary</i>	M. C. GREGORY.....	Unadilla, N. Y.
<i>Treasurer</i>	R. R. KIRKLAND.....	Philadelphia, N. Y.

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OFFICIAL NOTICE

Members of the association are hereby notified that at the December, 1913, meeting a vote will be taken to amend Section 1 of the by-laws to read as follows:

"Any person who shall pay into the treasury of the association one dollar shall be a member of the association until the next annual meeting, and any person who shall pay into the treasury *twenty-five* dollars shall be a life member and exempt from any annual payment. Honorary members may be elected by a majority vote at any annual meeting of the association in recognition of services rendered to the dairy interests of the state, and they shall be entitled to all privileges of membership except voting for officers.

FIRST SESSION

TUESDAY, 8 P. M., DECEMBER 10

The opening session of the convention was called to order by President E. H. Dollar, of Heuvelton, N. Y., who expressed his pleasure at the large attendance and said that he believed the association had made no mistake in selecting Syracuse as its meeting place, after which he introduced President of the Syracuse Common Council Rill as representative of Mayor Schoenick, who, in the mayor's name, welcomed the association to the city of Syracuse. President Rill gracefully extended the hospitality of the city to all in attendance at the convention, directing attention to the words on the city hall, "Syracuse Bids You Welcome," and assured the audience that the city would always welcome them in that spirit, whether they came in convention or individually.

President Dollar then called upon Mr. George W. Sisson, Jr., of Potsdam, N. Y., to reply to the address of welcome. Mr. Sisson spoke as follows:

To Mr. Rill, who is a representative of Mayor Schoeneck, and who has so thoroughly voiced his welcome which we know is sincere; to your chamber of commerce and all the good citizens of Syracuse and vicinity who have made possible the holding of this convention in so genial and hospitable an atmosphere, I desire in behalf of this New York State Dairymen's Association to return hearty thanks. Your beautiful and central city is fast acquiring a reputation as a convention city. Early in September, you safely quartered the charging herds of the Bull Moose, and a little later up came the Tammany herd on what proved to be a successful hunting expedition. And now you have the dairy herds without regard to breed or past party affiliations, all gathered here in harmonious conclave for the general good. I believe we may do more good than some of the others. Your political conventions may have made more noise and attracted more newspaper space and their affairs may have been momentous, but they were partisan in character. We have here the delegates sent to represent the

one and one-half million dairy cows of the farmers of New York, scattered from St. Lawrence county to Chautauqua, and furnishing an indispensable food product for our citizens and our children. As the official representative of the dairy industry in New York, your association is called upon to face important questions and to at least attempt the solution of grave problems relating to this industry. Like many other agricultural agencies in this state, you have given most attention thus far to the producing end of your business. You have discussed the selection and feeding of dairy cows, the care of their milk and its manufacture into butter and cheese and have truly educated the farmers and dairymen of the state in methods making for larger production and, let us hope, at lessened cost.

But I fear you have held this phase of your business so close to your eyes that you have not caught the broader outlook and the wider field that you must explore and occupy, if you are to be of most service not only to yourselves but to the ultimate consumer of your products.

You may be considered, in fact, as a great "Public Service Corporation," and, while you conduct your own business and offer on the markets the output of your own farms and factories, the very nature of your product, its importance in the food economy of the state, and its vital relation to the health of the citizens of the state, renders your business amenable in some degree to state regulation and oversight. That this regulation and oversight shall be sympathetic and intelligent, based on sound principles of dairy hygiene and common sense, is one of the problems in the solution of which your association can be of vast assistance.

Your members are practical men of wide experience, men who have demonstrated executive and business ability of a high order, and your very best talent should be expended in securing by frank cooperation with the state and city authorities such regulative measures as will be simple and efficient, tolerable and practical for the producer and at the same time a guarantee of purity and healthfulness to the consumer.

You should have a strong standing committee on these matters, that would be active throughout the year, keeping in touch with

situations needing attention, and prepared at all times to suggest, to aid, and to instruct.

Such things are proper functions of your association, and their practical and successful working out will demonstrate the true usefulness of your organization.

Then, aside from the production of pure, clean and healthful products, your association must very properly concern itself with the economic problems of the transportation and distribution of these products to the consumer. This must be done in self protection, for, having once turned out a superior article, for the quality of which the state holds you more or less responsible, you should demand that those other agencies that intervene between you and the protected consumer shall be held equally accountable for good service, careful handling and a delivery in good condition. And even more, you should see that this is done in a manner and by methods that eliminate every unnecessary expense or unfair profit, to the end that the consumer's needs may be served at the lowest possible cost consistent with a fair price, a price commensurate with the cost of production.

Producers of farm food stuffs of all kinds have given too little attention in the past to these problems of transportation and distribution, and just now they are receiving a good deal of attention as very important factors in the high cost of living. The whole problem of marketing and market facilities and agencies needs most careful study and a thorough overhauling. We know abuses exist, we know that methods are too indirect, we know that there is too wide a discrepancy between the price we receive and the price the consumer pays. But how shall we correct these things? Here is a broad field for cooperative effort on sane and practical lines. Dairymen have proven the success of cooperative effort in the producing end of their business. Why not apply the same methods to the marketing end? Some practical plan, truly cooperative, that shall bring producer and consumer into closer relation will not only save unnecessary expense and unearned profits, but make for a better mutual understanding and feeling between the two most interested parties.

I believe that for years we have been putting all our forces, and the state, by means of education and extension work, has been

putting all its force on the matter of production; and we have entirely overlooked the economical side of our business, without a proper solution of which we shall still hear the cry of poor business in farming and high cost of living in the cities. Now if your association will take up some of these problems of the food producing business of this state, and its distribution, I believe you will have achieved a great work and something even greater than to come together once a year and have a large meeting. Unless you make yourself a force that is felt from year to year, a constructive force of some sort, you will fail in the opportunities which I believe are yours.

PRESIDENT DOLLAR: There is probably no one man throughout the state the farmers like so well to hear from and to be acquainted with as the Commissioner of Agriculture. They like to get acquainted with him because he has to do with all the interests of the farmers, and some of the things the farmers do not do that they ought to do. I am glad at this time that we have with us the Commissioner, who will talk to you about some of the things that the Department is intending to do or trying to do. It gives me great pleasure to introduce to you Hon. Calvin J. Huson, Commissioner of Agriculture.

COMMISSIONER HUSON'S ADDRESS

Mr. President, Members of the New York State Dairymen's Association, Ladies and Gentlemen: I feel like congratulating this association on this most auspicious opening of their annual convention. The dairy interests of the State of New York, as you are all aware, are by far the largest agricultural interests we have. There are more people employed in it; there is more capital invested in its development; and the total product is largely in excess of any other agricultural activity within the state. The State of New York is pre-eminently a dairy state and I can say that without detracting from any other of our numerous important agricultural activities. But by reason of our population, our markets, our soil and our climate, the dairy interests are subject to almost unlimited expansion and we here in the State of New York can be assured of a ready market for all the products of our dairies. The prosperity of those engaged in this great in-

dustry is a matter of concern and importance to all the people of the state, and that this industry has attained to such large proportions and that the dairy products of the State of New York have maintained a high standard during all the years of the past speaks well for the breadth of view and the character of the men who are engaged in it.

I want to speak to you quite informally and very briefly, I assure you, as to some of the relations which the state sustains towards this industry and what the state is attempting to do in that regard. We have upon our statute books in this state, and have had for a number of years, laws regulating or intended to regulate this great industry. The purpose and object of these laws primarily is to assist in the development of the dairy interests of the state. If they are not calculated to perform that purpose, they have no other excuse for existence, and the question is whether the laws of the State of New York so far as they affect the dairy interests of the state are based upon wisdom; whether they are the best that can be enacted to promote this great industry and at the same time protect the health and the lives of all the people of the state. And just now there is some considerable discussion upon the question as to certain proposed changes that have been suggested in regard to some features of the laws that affect you men very vitally. All men, whether they be engaged in the dairy industry or whether they be consumers of our dairy products, will agree that it is of most vital importance to all the people and particularly to those who have their money invested in this industry, that our product should maintain the highest possible standard. It is not too much to hope, I believe, that the product of the dairies of the State of New York should be brought to such a standard that they will be a guarantee of the healthfulness, purity and cleanliness of the product.

The health of our dairy animals is one of vital concern to all of us. We have heard and are hearing perhaps more just now than usually, as to the tuberculosis affected herds of the state. I do not believe that tuberculosis exists in the dairy herds of the State of New York to a greater extent than in any other state. I believe that the dairy products of the State of New York are of as high a standard, are as free from anything that communi-

icates disease as are the products of any other state. Yet the fact remains that tuberculosis exists in our dairy herds to a greater or less extent. And there is a general feeling all over the state, I think, that the present law, framed for the purpose of eliminating this disease from our herds, has not resulted in making as rapid progress as its framers hoped at the time it was enacted. During the year that has just passed the state has officially tested with tuberculin in round numbers 30,000 dairy cows. When you take into consideration that we have in the state more than a million and a half dairy animals and that the state has only been able to test that number, or 2 per cent., in a single year, you will appreciate that the progress is necessarily slow and that the number of herds from which this disease is eliminated necessarily small and scattered and that when surrounded by other herds that are not tested, the danger of its being brought back into these herds that are tested and from which it is eliminated, is exceedingly great. Thoughtful men have been thinking of this subject recently perhaps more intently than during the immediate years of the past; and it has been suggested that the time has come when we ought perhaps to take some more advanced step in this direction.

I am speaking of these matters here to you to-night for the reason that this body of men are perhaps more vitally concerned in these questions than any other single class of our citizenship, and that no law can ever be wholly successful in eradicating tuberculosis from our dairy herds unless it is so framed that it receives the cooperation and support of the great body of dairymen of the state.

And so it has been suggested whether or not the present law should not be amended, leaving as it now exists the tuberculin test unimpaired, but providing for a physical test of all the dairy animals in the state whose milk is sold in liquid form. Scientific men who have studied this question tell us that upon a physical examination a large percentage—some of them stating, I think, as high as 90 per cent.—of the actual spreaders of this disease in the dairy herds of the state can be detected and eliminated. And it seems to me that you men, assembled here in your annual gathering, could well take up and discuss these questions; and the ex-

pression of your views in regard to what ought to be done would do very much towards solving this question.

Another suggestion has been made, and that is that as the law now stands the skim milk and whey that comes from our butter factories and our cheese factories and goes back to the farm and is fed to calves and pigs, is a prolific source of the spread of this disease and that some provision ought to be enacted by which this product should be pasteurized before it is returned to the farm for food.

Another important question relates to the indemnity which the state ought to pay for a diseased animal which is condemned and slaughtered by order of the state. Men will differ, and differ very widely, upon this subject, yet all must agree that a diseased animal is an unprofitable animal in any dairy herd; that no dairyman can afford to retain in his herd an animal afflicted with tuberculosis where it is advanced to such a stage as to imperil the health of his other animals, and that fact ought to be taken into account when it comes to fixing the indemnity which should be received for condemned animals. And it has been suggested that in cases where an animal is condemned as a result of a physical examination, that is where the disease has advanced to such an extent that it can be detected by clinical symptoms, or in case of the tuberculin test where on post mortem the disease is found to be generalized — that in those cases the animal is unprofitable and dangerous for the owner to retain in his herd and that fact ought to be taken into account when the compensation which is to be allowed by the state is determined.

And so at a conference recently held in Albany on this subject, at which a considerable number of representatives of this organization were present, as well as milk consumers and consumers of other dairy products and health officials, it seemed to be the consensus of opinion that if in those two cases the indemnity was fixed at \$15 for each animal destroyed, giving to the owner also the hide and the carcass when passed for human food, that justice would be done the individual.

I speak of these things, gentlemen, for the reason that they in some form are likely to come before the legislature at the ap-

proaching session and it seems to me that these questions might well be taken up by you and considered fairly in the light of all the facts and circumstances which are presented in the consideration of this important question so that we could have from this body of dairymen of the state some expression which would carry with it their approval or disapproval of any of these propositions, with the assurance that whatever law is enacted would have the hearty support of the dairymen of the state. You never can rid the state of tuberculosis in our dairy herds simply by legislation. We may enact such laws as we will, but unless such laws are received with accord by the great body of men who are primarily most affected by them, little progress can be made in ridding the state of this disease. I believe the great State of New York with its almost boundless resources and possibilities, should be the first of all the states to take such advanced position on this subject as will wipe the disease from its herds, and I believe it can be done and will be done if the proposition receives the cordial support of the dairy interests of the state. If that could be done and then laws sufficiently stringent should be enacted so that we might thereafter forever keep without the state all animals that are likely to bring the disease back into the state, it would be of great advantage to the dairy interests of the state, and the dairymen of the state would occupy a proud position and would reap the reward of their efforts in the price which they would be able to realize for their products.

I know these things are dry and uninteresting to a large portion of this audience, but it seems to me that these are questions of vital interest at this time and I indulge the hope that during the two or three days you are to be together in your annual meeting you will devote some consideration to them and that we may have from this great body of dairymen some expression upon these questions that are of much interest to all the people of the state.

PRESIDENT DOLLAR: It is always the duty of the president to deliver an annual address. I know you are surprised because it is not on the program. Perhaps the secretary did not want me to speak, but it is a hard matter to keep me from talking. I have the honor to present to you my report as president of your association.

ANNUAL ADDRESS OF THE PRESIDENT

E. H. DOLLAR, HEUVELTON, N. Y.

During the thirty-six years that the New York State Dairy-men's Association has been in existence, the dairy farmers of this state have experienced many seasons of unprofitable business; many seasons that the expenses of the dairy farm were as much or a little more than the income, but the dairymen of the state for the last few years and especially for the year 1912 have been more prosperous than ever before. The prices of dairy products have advanced to such an extent that many consumers believe that the dairymen are receiving exorbitant prices for their products, and yet we find that many times they are selling their produce actually below its cost. The consumer oftentimes does not take into consideration the increased cost of everything that the farmer has to buy. For example, building material has increased over 10 per cent. in a single year, and the dairyman uses large quantities of building material. He also uses machinery, groceries, clothing and household goods, all of which have advanced from 10 to 50 per cent. in the last decade. Labor, which is one of the chief factors in the cost of dairy products, has advanced in the last fifteen years nearly 100 per cent., and yet the farm laborer is not getting larger wages than he should for the service required of him.

The farmer who makes a specialty of dairying must of necessity demand from himself and his farm help a long day's work, and even at present prices for dairy products, the dairy farmer is the poorest paid tiller of the soil, in comparison to the efforts that he puts forth, that we have in the state. Certainly dairy products have advanced since 1893 in some instances more than 100 per cent., but let us not forget that the prices at that time were so low that it meant ruin to the dairy industry had they not advanced.

There are several reasons why the dairyman in many cases is an under-paid man. One reason is the failure of the present system of paying for milk to stimulate better methods among dairymen. We hear constantly from our city milk authorities the

demand for clean milk, for milk from tuberculin tested cows, for milk produced in high-scoring barns, and all this, but we rarely hear that the consumer is willing to pay one and one-half or two cents a quart more for this milk because it does come from such cows, housed in such a barn. But rather, the man who prides himself in his business enough to produce a high-grade article is compelled under existing conditions to accept the same price for his product that the low-grade dairyman gets. In other words, the slovenly, unclean methods of about 10 per cent. of the dairymen work hardship to the entire business by lowering the grade of all milk collected at that factory, creamery or shipping station; because in most cases all milk delivered is run together in one vat, and even if it is 85 or 90 per cent. good milk and 10 per cent. low-grade and dirty milk, it makes a pretty poor medium when mixed together. At least it is of such a quality that it cannot be sold in our large cities unless pasteurized, which makes it grade B milk, while at least part of it would score much better were it kept separate from the small per cent. of dirty milk taken in.

Do not understand me to say that I do not think this mixed milk needs to be pasteurized before using it for food. I know it does. I have seen some drawn to factories that I would want boiled for a week before I would feed it to my calves, but what I object to is mixing the clean milk with that dirty stuff and making it all dirty.

In this I believe the men who operate the factories and shipping stations are somewhat to blame. No milk is too dirty to be accepted at some plants. If one factory refuses it, another takes it in and the owner congratulates himself on having secured another patron. This condition is especially true at this particular season of the year when dealers are short of milk. Any kind of a barn and all kinds of cows are good enough when milk is scarce, and the milk from dirty cows kept in a dirty barn and delivered to the factory in dirty cans, is as acceptable as milk from a \$10,000 barn and groomed cows, where small-top pails are used and every care taken to produce the highest possible grade of milk; and all of it is mixed together as soon as it reaches the shipping station.

This is the reason that every time you hear men or women discuss milk from the platform they all proclaim it dirty milk. This has been done to such an extent that the consumer to-day actually believes that all milk is dirty. He therefore refuses to pay more for it than he does now, and you cannot blame him. Is it any wonder then that some of our college professors even, have said that under present conditions a man is a fool to produce clean milk.

Let us look at this from the viewpoint of a high-grade dairyman, the man who appreciates the value of a clean barn with plenty of air space, plenty of light and sunshine, good ventilation and tuberculin tested cows. What inducement is offered this man to put forth special efforts, spend money and do the thousand and one things that go with producing a high-grade milk under present conditions.

During the last ten years I have heard a great many scientific, and no doubt conscientious men, discuss milk from the platform, but never have I heard a man say to the dairymen "You have done well. You are sending to the city to-day better milk than you ever sent before. Every year has been an improvement. Go ahead and we will say to the consumer, the milk supply is improving. It is better than it was last year or the year before, but it will never be better than it is now until you pay for it in just proportion to its value as a food; at a price and on a scale that will place a premium on hard work and honest effort as against dirt and shiftlessness."

Many think that the farmer does not want to be clean, that he enjoys being a producer of dirty milk; but I know that the average dairyman is just as anxious and just as willing to make his place of business neat and clean, as far as possible, as the average grocer, hardware man, or dry goods merchant, providing the profits from his business make him able to do so.

I think that the same condition exists in regard to eliminating tuberculosis from the herds of this state. Many think that the dairyman does not realize his danger by having diseased animals or he would get rid of them; but I believe he never will care to be more free from reacting animals than he now is, until the produce of those animals is worth more on the market than the

produce of untested or diseased cows. The farmer is ready to test his herd and take out the diseased cows just as soon as he will be paid a premium for his milk over his neighbor who has never tested at all. I am glad to say that right now, through the efforts of Commissioner Huseon of the Department of Agriculture, a change in the law affecting bovine tuberculosis is under consideration.

There are several reasons why dairy products have advanced in price to where they are now. Rapid increase in the population of our cities; a small increase or no increase at all in the population of the rural districts, making a larger number of consumers and a smaller number of producers each year, is one cause. Putting every year less butter and cheese on the market,—many times less than the demand, where a few years ago large quantities were exported, is another cause. Also the rapidly increasing demand for ice cream; this demand having increased during the past five years until at present every man, woman and child in the United States consumes on an average over five quarts each, and still the ice cream business is just in its infancy. Think of the vast amount of fresh cream and milk, or by the use of the homogenizer high-grade butter and skim milk, used in the manufacture of something like 150,000,000 gallons of ice cream. It means just this, another great market has been opened to the producers of dairy products that ten years ago was not dreamed of; and the dairy farmer should stimulate and encourage the manufacture and sale of ice cream as he would the manufacture and sale of butter and cheese.

To be sure the dairyman is much to blame for his lack of profit. Many times his methods are such as would ruin any business in the world. Thousands of cows are kept in New York State that do not make their owners a profit over the cost of their feed, and still they continue to keep them because they do not know they are unprofitable. If the owners would keep a record of these cows they would see at once that they were eating their heads off and get rid of them. They continue to use the poorest of sires and expect to secure profitable dairy cows, when nothing but pure-bred sires should be used on any dairy farm. They are, however, rapidly learning the value of such things as the cow test-

ing associations, better feeding methods, keeping records, etc., and if the present prices for the products from the dairy farm continue, the dairymen should prosper.

I have spent considerable time discussing the condition of the dairyman, because I think on his success depends the success of all other branches of the industry with which this association has to do. If the dairyman does not prosper, the factoryman surely does not. If the factoryman does not make money, the supply man cannot sell him new machinery, and so on; and for that reason I believe I am justified in explaining conditions which confront the dairyman as I have tried to do in this paper. This association can do much through its membership to stimulate better methods on the dairy farm, and if the factorymen would stand shoulder to shoulder and refuse to take milk that was unclean, or that had to be cooked before it could be used for food, dairymen would realize the uselessness of such methods as some of them are following to-day, and in a few years dirty milk would be a thing of the past and every dairyman would be a better dairyman, because it would pay him to do his best.

SECOND SESSION

WEDNESDAY, 10 A. M., DECEMBER 11

Meeting called to order by President Dollar.

PRESIDENT DOLLAR: I am glad to see so many people interested in the discussion of the cheese industry of this state, so interested that the cattle sale in the next building will not take them away. The cheese industry is one of the greatest we have and it deserves our careful consideration. Anything that can be done to advance that industry certainly should be considered.

The first thing on the program this morning is the appointment of committees. I would ask that these committees, if possible, get together at one o'clock in the lobby of the Onondaga Hotel and we will furnish rooms for them to meet and go ahead with their work.

Auditing Committee: George A. Smith, Geneva; G. E. Hogue, Arcade; H. A. Rees, Lowville.

Committee on Resolutions: F. W. Sessions, Utica; W. N. Giles, Skaneateles; W. A. Stocking, Jr., Ithaca,

Committee on Legislation: Hon. George L. Flanders, Albany; F. N. Godfrey, Olean; John F. O'Brien, New York.

Committee on Cow Testing Associations: Prof. H. H. Wing, Ithaca; T. F. Rutherford, Madrid; Harry Vail, New Milford.

Committee on Extension: Charles H. Tuck, Ithaca; H. E. Cook, Canton; F. W. Howe, Syracuse; F. G. Helyar, Morrisville; J. D. Edwards, Albany.

Committee on Nominations: Harry B. Winters, Albany; F. W. Sessions, Utica; F. N. Godfrey, Olean; Ralph Bennet, Cortland; Charles E. North, New York.

Undoubtedly some of the resolutions committee were here last night and heard the statement of Commissioner Huseon that he wished something would be done by this association along the line of sanctioning or rebuking the efforts being made about the change of the law in regard to bovine tuberculosis. I think the committee should bring in some resolutions for consideration by this convention.

With the permission of the audience, I will turn the meeting over to Prof. Fisk, of Cornell University.

PROF. FISK: It was only a few moments ago that I knew I was going to be honored with this position, but I am glad to assume it. I want to see this meeting go on, and I want to see it one of the most successful and instructive cheese meetings that we have ever had. We have a man with us who is going to speak on the cheese industry and after that the meeting will be open for discussion; and the success of this meeting, I believe, will depend upon the enthusiasm that you put into this discussion. I know that all of you who are familiar with the cheese work and are right up against it in the factories, and others going around giving instruction, have questions to ask, things that we do not know how to solve, and would like to know how other people have worked out these same questions. This is your opportunity to find out how to get at these difficult propositions. It gives me a great deal of pleasure to have a man with us to speak to-day who has the largest cheese cold storage in the United States and who is very familiar with the commercial side of the cheese industry, as he is one of the largest cheese buyers, Mr. S. B. Richardson, of Lowville.

THE CHEESE INDUSTRY

S. B. RICHARDSON, LOWVILLE, N. Y.

Mr. Chairman and Gentlemen: When the secretary of this association invited me to say something with regard to the cheese industry, having in mind on this occasion both the commercial and the industrial side of it, I felt that he was putting me in rather an unenviable position, for I knew that I would have as my auditors many who know much more about the cheese industry from the manufacturer's side, especially the scientific side of cheese and its making, than I do. I have had some experience on the commercial side of the industry, and it is on that side that I propose to occupy a few moments of your time, and that only, as the chairman has suggested, to start you along a line of inquiry seeking after information that will make this session the success that the association hopes it will be.

I want to say in the first place that for the last twenty years cheese making in New York — in which state more cheese is made than in any other state in the Union, approximating nearly 50 per cent. of all the cheese made in this country — has had the attention of the law-makers of the state, and that they have framed laws which have appeared upon the statute books from time to time, meant for the development and the pushing of this industry. I believe that this assistance of the state has been of almost inestimable benefit to dairymen. The commissioner of agriculture is doing whatever he can, consistent with the statutes which are before him as his guide, to assist in bringing our industry to a higher state of development. His predecessors in that office did some good work, and I believe that the result of their work has all been of the same trend, to give us assistance in bringing about a better condition of things.

I wish to say following this, that the statistics of cheese making in this state show a general falling off in the amount made. The oldest statistics gathered by the department of agriculture of cheese made in this state are for 1892. In that year I think there were something like 131,000,000 pounds. That is the largest amount made in one year during the period that the statistics have been gathered. I find by referring to the table that in that same

year, 1892, there were in round numbers 19,500,000 pounds of butter made in the State of New York, and that this is the smallest amount of butter that has been made in any year since that time. Now, I do not think that the general falling off in cheese has been brought about by a smaller amount of milk being produced in the state. It is rather from the fact that more butter has been made in the state continually and that more crude milk has been shipped from dairy districts to the large cities, wherein the population increased with much greater rapidity than has the amount of milk produced. I find, following this table up, that with one exception every year since 1892 has seen a large percentage of increase in the amount of butter manufactured until in 1904 — the last year's record that I have with me — the amount of butter made in the state in factories was 64,923,779 pounds, three times more than made in 1892. While in 1892 we made something like 131,000,000 pounds of cheese, in the year 1904 the amount had shrunk to 124,500,000 pounds, in round numbers. I find that during this period there was no year — with the exception of 1896, which was a dry year and a year of light production — but what the percentage of increase in the amount of butter made has been large; while in the cheese industry I find that from 1892 to 1904 the amount made had shrunk something like 6,000,000 pounds.

Now this means several things for cheesemakers. In the first place, it means that a large proportion of our milk goes, not into cheese, but is either shipped as crude milk or cream to the cities or else is made into butter. And if we would maintain our position as makers of cheese of best quality it behooves us as dairymen to listen to instruction that we have had and to profit by the efforts of the state to foster our industry. I have no question but what the best cheese made in the State of New York to-day are the best cheese that are made in this country; but I do not wish the cheesemakers of this state to get the idea that we are all the good cheesemakers there are in this country. The State of Wisconsin is making a magnificent cheese. They have taken from us some of our best instructors and they have copied our work and initiated work of their own that has developed an immense cheese industry there and their cheese are coming

to stand next to New York State cheese in the markets of this country. Understand, our markets are domestic; we are not looking for foreign quotations. In 1883, the year that the dairy department of this state was organized, when we got up in the morning and wanted to know what our product was worth we had to look at the foreign quotations. We had to see what the cable the day before was, before we knew what to ask, or to pay for cheese. To-day, we have paid I think on an average during the present year two cents a pound more in Morrisonville, on this side of the St. Lawrence, than they have paid in the city of Brockville, on the other side of the river, where there is a large Canadian board. Years ago they bought our cheese and shipped it there in large quantities. For the last few years, if it had not been for the almost, or perhaps quite prohibitory tariff put upon our product, we could have shipped cheese into this country from Canada by the carload. I have mentioned this feature of competition between the states because I see that our western friends are coming forward with rapid strides. They have some advantages over us in this market. They have the advantage of freight. For instance, in the Cuba district they get a freight rate to Chicago of 35 cents; it costs us 44 cents from Lowville to Chicago. That gives them a good, large percentage in their freight rate over us. You go farther west, to Wisconsin, and you get a rate from the Wisconsin cheese board and markets into Chicago much less than the rate from Cuba. You go to San Francisco, where perhaps 200 carloads of cheese from this and other eastern and middle states go in the year, they get a rate sometimes a cent a pound better than we can. Our rate, if I remember rightly, is over \$2.00 per hundred, over two cents a pound. There is no way that we can hold our own against the cheese manufacturers of Wisconsin except to put up a product of such quality and ship it in such a manner that they are willing to pay on the Pacific Coast more money for our cheese than they will pay for the Wisconsin cheese. I am putting perhaps more emphasis on this one point than I should, but I am doing it for this reason: I want the cheesemakers of New York to understand that while we have not been able to get all the cheese we wanted in this state, and could have handled many thousands of boxes more this year,

the tendency is for the maker to think that because the cheese are wanted so badly almost anything will go, and he sometimes slights the body of his cheese a little for markets that *must have body*. He underestimates the value of a fine, nice-looking commercial package, which makes a difference in the value of the cheese when it goes to the market. In other words, by neglecting details that are very important to the success of his business, he loses in reputation, I believe, very much more than he gains.

I wish to say also that a few cheese are made in Michigan and they are making more every year, and I am informed by Chicago dealers and others that they are producing a better quality each year. They are getting the germ of progress in their factories and do not like to sell cheese two cents a pound less than the New York product brings; this improvement will affect our cheese trade. So if we hold the markets we now have we must give them the best goods we can manufacture; and we are not making enough to afford to slight the manufacture of any considerable percentage of the goods.

I want to say just a word from the point of sanitation of factories. I am the executive officer for the commissioner of agriculture in the fifth agricultural division of this state, which includes that territory between Lake Champlain and the Oneida County line, Clinton, Franklin, St. Lawrence, Jefferson and Lewis counties. It is a cheese and butter making section. Three of the counties, in my opinion, contain the very best territory for the making of fancy cheese in the United States; and two of the counties, perhaps I might say three counties, are very prominent in the manufacture of a very fine class of creamery butter. The department of agriculture, under the direction of Commissioner Huseon, has sent men through this section to examine and report on the sanitary condition of the factories, and I regret to say that these reports as a whole have not been flattering to the manner in which our factories are conducted. The drainage in many cases has been poor; the odors around the factory have been foul; some of the receptacles for whey and also for milk have been found in a very unsanitary condition. In my agricultural division there have been about 400 of these different factories and

creameries examined during the last season, and I am glad to say that there has been not one prosecution, although about 150 factories of the 400 examined have made substantial improvements not only in the environment of the factory and in the general cleanliness of methods, but also in laying cement floors and improving the ceilings of their plants and removing such other objectionable features as have been called to their attention by the inspectors. This I regard as a feature with which we should be very much pleased, and I know that the department is very well pleased with the progress that has been made in this direction. Of the balance of the factories, very many have been given time to make improvements after they were closed up for the season; many are now making such improvements as have been recommended, and many more have promised to do so as soon as it is practicable to get at the work in the spring. So I believe that more during the last year than any year in the history of the department's work the sanitary condition of the factories has been improved, and I feel like congratulating not only the cheesemakers of the state and the dairymen upon this fact, but especially the department that inaugurated it. I will be excused if I speak personally of Mr. Burke, chief of the bureau of dairy products, for his part in the work, which I assure you has been very active.

Perhaps at this time it would not be out of place for me, as a dealer in cheese and as being interested in a cold storage plant where cheese is kept, to speak of the kinds of cheese that are made in northern New York, and this applies in lesser degree, I think to other portions of the state. There are two kinds of cheese which for the most part are made in northern New York. One is known by its friends as washed curd; by its enemies as soaked curd, and by people who do not know much about it as watered curd. Now I do not care what name you give this product. I care much more about what kind of a product you put upon the market after you get it made. I am a thorough believer in the fact that there is room in this country for all the washed curd cheese of a proper character, by which I mean a proper quality, that is being made. I believe that more could be made with profit to the dairymen. But understand, when I

say that I do not mean soaked curds; I am not referring to the "good works" of the man who is pouring water into his curd before he salts it and trying to soak all the water into it he can and sell that water for 15 or 20 cents a pound, to defeat the efforts of his neighbor five or six miles away. I mean the man who is making what we call a first-class washed curd cheese, that has in it no unassimilated moisture, but that will stand up for months in cold storage and maintain its flavor and condition; a cheese that in at least half of the territory east, including every state in New England and some parts of New York and Ohio, will sell for as much as the cheese that are made for other sections with one to two pounds more milk in the pound of cheese; a cheese with which for five years I have not seen the market blocked. I believe it is a healthful product, and I believe that its manufacture should not be discouraged.

Now in regard to firm cheese, cheese that are not washed; we have room for all we are making. We could handle more if we could get them. The far west wants them. The southern states will not take a washed curd; they want a firm, smooth, solid cheese. They have not the cold storage facilities that we have in New York. They have a climate that is very warm and they are obliged to have a firm cheese to stand up. So I believe we need just what we are getting. We need a certain percentage of our cheese made in that soft product, and we need the firm, solid-boring, clean-flavored cheese that is demanded for sections of the country where the temperature is higher and where they know and want that kind of a product.

Now just a word in regard to skimmed cheese. Some people say that it ought never to be made, and sometimes when I figure up my profit and loss accounts for the year I feel just as they do. There are times when cheese is high and when there seems to be a call in certain sections for cheese that have been skimmed somewhat; and if the product is taken, as it often is up to a certain amount, it is a good thing perhaps for factories to make skimmed cheese. But the temptation is before us all — and we are all human — to say to the buyer when he asks at the factory, "How much are you skimming this?" "Oh, 25 or 30 per cent." and the next morning perhaps the maker will skim it 40 or 50 per cent.

And in the last three months I have bought 50 per cent. cheese and found them to contain from 11 to 12 per cent. of fat. This is the temptation, and the object of my reference to it is to suggest whether it would not be a good plan for this association to ask the law-makers of the state for a law under which skimmed cheese should be branded as to the percentage of fat contained. I believe that the time for this law has come. Cheesemakers have said to me, "How am I going to tell what percentage of fat I have in my cheese?" If you have a Babcock tester and a torsion balance scale you can tell in 15 minutes. I do not dare to put my money into skimmed cheese without testing for butter fat. Not a single shipment of skimmed cheese has come into the Lowville cold storage this fall but what it is tested for fat. We have a man for that purpose and the tools to do it with. If we are buying a 50 per cent. skimmed cheese and a man sends a cheese with as little as 10 or 12 or 14 per cent. of butter fat, we dock him on the price. It is proper, it is common honesty. You cannot afford to do it in any other way. Now then I ask if this association should not take the position, by resolution or otherwise, that a law in regard to skimmed cheese be passed making it obligatory upon those who skim cheese in factories to place upon the cheese itself, not on the box but on the cheese, in letters of readable size, three-eighths or one-half inch high, a statement of the percentage of fat in that box of cheese. My impression is that in Wisconsin the law almost prohibits the making of skimmed cheese for this reason; that they have to be made of certain size and appearance so that you can tell them rods away and know they are skimmed cheese. Their shape, size or color distinguishes them from full cream cheese. A further reason for branding a skimmed cheese is the fact that many dealers who buy skimmed cheese are selling the public a skimmed cheese that has no brand on it whatever, and they are selling for prices that the consumer cannot afford to pay considering what he is getting. Now how does this hurt you? Assume that I am a grocer in western New York and I buy five cheese from Rochester or Syracuse that are skimmed. I take them into my store. You come in and want a pound of cheese. I cut you off a pound and charge you 15 or 20 cents, and you take

it home and eat it. You do not get cheese hungry again for a week. Now suppose I gave you a good palatable piece of full milk cheese, creamy, nice-textured and good flavor. You go home and eat it, and you feel better all the evening. And you come back for more. That is where it hurts us — by reducing the sale of cheese. I have seen the time when a market congested with skimmed cheese has hurt the price of full cream cheese late in the season a cent or two a pound.

The question of pulling together for the best product that we can make is very much more important, in my opinion, than many of us think. It is not a question with you or me whether we can get a little better average than the next factory; it is a question whether we can put up and send to the market a cheese that always holds its own, and always stands up to the mark on the outside of the box. And then we are too likely, if four or five buyers want cheese and they are a little bit off this week, not quite so good as they ought to be, to make them take them and pay best price for them, which hurts them fully as much as it hurts us.

If you have trouble with your cheese product and need help, a letter will bring an expert maker at the expense of the state of New York to your door in twenty-four hours. We do not get the old-fashioned dead, sour cheese; I do not know that I have seen one this summer. We do not get the bad-flavored cheese that we used to get.

As the chairman suggested, this meeting is for the good you get out of the discussion, and I hope you will get a lot more good out of the discussion than out of my statements, which have been meant to bring out points that you want to see discussed.

DISCUSSION

MR. PEETS: Please explain the difference in the amount of milk between a 50 per cent. skim and one that shows 11 or 12 per cent butter fat.

MR. RICHARDSON: As I understand it in making a skim if we contract for 50 per cent. skimmed cheese we expect the maker to skim, to put through the separator, 50 per cent. of his milk; and if it is a 25 per cent. skim, 25 per cent., etc. I do not know the

exact percentage of milk skimmed that would bring about a fat content of 11 or 12 per cent., because it would vary with the richness of the milk. If the maker uses his Babcock and his torsion scales he can tell you what he has in his cheese and brand his box accordingly.

MR. LANG: I think the attack on skimmed cheese applies to about 40 or 50 per cent. of the entire make. When it comes to good skims, they generally go through to New York; up country consumers do not see them. I presume on account of your discussion being aimed at cheese it would not be proper to say that a statement of the per cent. skimmed should also apply to other dairy products. Homogenized cream should not be shipped except as homogenized; nor whey butter except as whey butter. Your ideal is good; we think they should be marked to show what they contain in butter fat.

MR. RICHARDSON: I am very glad that your experience has enabled you to find better skimmed cheese than I have. I have no doubt but what there are better than what are shipped to me sometimes. I believe that skimmed cheese, properly skimmed and well made, is a good healthful product; and perhaps a man would want another pound in about three days if he got your kind. With regard to the branding of products, I think you are entirely correct. I believe the dairymen of this state can afford to put cheese, butter, cream or anything else on the market and sell it for just what it is.

MR. FREDERIKSEN: It is the same question that comes up over and over again, how to get to the knowledge of the consumer what he is buying. You can brand your package of butter or cheese and you can compel the grocers, manufacturers and wholesalers to sell things for what they are. But how can you compel the boarding-house keeper, the hotel man and even the retail grocer to do the same with the consumer. Have you any remedy for that? The great trouble is to get to the knowledge of the consumer what he is getting. That can be done I think in the case of oleomargarine, for instance, by having a certain shape of package or shade of product. How can it be done with the skimmed cheese? I do not believe in prohibiting skimmed cheese, but in encouraging every honest manufacturer, and compelling him and the wholesaler to sell it for what it is, so that when it goes

from the retailer to the consumer, the latter will know that it is skimmed cheese. And further, when you come to the boarding house how is a boarder going to know if it is skimmed cheese?

MR. RICHARDSON: I do not see that this bears particularly on the remarks that I made in regard to skimmed cheese. I think we should start right and mark them properly at the factories. I believe that the pure food laws now in existence in this state will take care of the objection as to the boarding houses and the retail dealer in time. We cannot do it all at once.

VOICE: What percentage would you say would be profitable for a man to skim and still maintain a good quality that would be marketable?

MR. RICHARDSON: I think that depends entirely on the marking. You will not deceive anybody if you mark the cheese for what it is. I do not want the impression to go out that I am against the manufacture of skimmed cheese. I simply want it made and delivered for what it is; I want people to know what they are getting. The condition of the market might be such that it would be advantageous to the factory to make a full skimmed cheese, but that would not appeal to me as the proper cheese to sell if we had enough of the other kind that was better.

VOICE: I wish to say that I am very much in favor of the recommendation of Mr. Frederiksen in regard to branding cheese for exactly what they are. As he says, it is a matter of honesty and fairness. I do not believe we can ever afford to get away from those fundamental principles in our business.

DEAN COOK: I am a maker of skimmed cheese; have not made anything else in quite a number of years. I never have tried to make a cheese without knowing the percentage of fat it contained; and have never sold it as 50 per cent. or 25 per cent., but on the percentage of fat contained. What the wholesaler does with it the manufacturer does not know.

MR. ORVILLE: The percentage depends altogether on the manufacture. The cook largely governs the quality of the product made. Many conditions enter into the manufacture of skimmed cheese that it takes experience to understand.

CHAIRMAN FISK: Mr. Orville, do you consider it more difficult to make skimmed cheese than full milk cheese?

MR. ORVILLE: I do.

MR. RICHARDSON: Do you mean by that that the process is not as easy to learn, or that the actual process of making involves more labor and more scientific knowledge?

MR. ORVILLE: All it requires is the knowledge of the cook for the certain percentages. To heat a 50 per cent. or 25 per cent. skim you would have to know the percentage of fat, and regulate your cook so it would be uniform from day to day.

DEAN COOK: I think you are opening up some pretty interesting and important questions. Some years ago, if I remember correctly, a law was passed in the State of Pennsylvania in an effort to govern the skimmed cheese business and do it justice. I think I am right. The law did not recognize skimmed cheese unless it was in full three-fourths skimmed. The full cream cheese should have 32 or more; the half full cream should have 16; the three-fourths should have 24 per cent. of fat. The half full cream should have 26 per cent.; the quarter full cream should have 8 per cent. And anything under 8 per cent. was branded skimmed cheese. This seemed to me to be the most sensible thing ever enacted, and I understand the law is inoperative for just the reason that Mr. Frederiksen has raised. It worked all right from the producer to the dealer, but when the retailer got hold of it he chopped off the brand and then sold to his consumer just what he pleased. There is your trouble. I am not so sure that you ought not to appoint a committee to work on this. This skimmed cheese is absolutely legitimate in every way, but it is doing the cheese business an injustice simply because it is not controlled.

I just had a little experience that brings out the force of this washed curd cheese. As Mr. Richardson says, it is made for New England, and a few other states will buy the stuff. It ought not to be made; it is a most miserable product. It will bring trouble to a man's stomach if he will take enough of it. I think the situation is that the New England people and some others demand a soft cheese. They must have it or they will not take any cheese. Any man who has studied the conditions will understand why that is so. We have been making some soft cheese, but we have been making it of milk just as good as the best that goes to New York City, and we have been able to make this so soft that we have shipped it right into the market that is taking the washed curd

cheese. I can drive every washed curd cheese out of that town in time. If the stables are all sorts and kinds and the milk in bad condition, the poor cheesemaker is up against it. I went into a stable within three miles of Canton the other day that ought to be closed by the Commissioner of Agriculture. It was the most abominable place I ever saw; and yet the owner is a prominent man, the biggest patron of the creamery, within 30 rods, and they have to take him, good, bad or indifferent. I think we ought to take steps in New York to have the same control over our butter and cheese factory milk that we are getting over milk for market shipment. We cannot bring it about in a year or may be in five years, but I think we ought to set in motion some positive currents that will lead to just that thing.

MR. LANG: Have they taken up instruction in cheese making at the Canton school?

DEAN COOK: We are giving the students instruction in making skimmed cheese, but not in the washed curd.

MR. W. E. HALL: I have been in the cheese industry 24 years, and for 20 years I have made more or less washed curds. They tell me that the markets — New York markets of course — will not handle washed curd, but you can send the people in New York City a washed curd cheese and they want it. I really believe that the washed curd cheese has done more to develop the consumption of cheese than any cheese we have ever put on the market. If made properly it will take anywhere in the world.

DEAN COOK: I believe that is a good point. The manufacture of the washed curd has developed the market, but that does not make the stuff sound or good. If it was standardized so that the very highest types — which are just about the same kind that any man can make without washing, out of pure, clean milk — there would not be much trouble. But the trouble is the temptation to soak in more water.

VOICE: Have you any book that shows the method of making soft cheese?

DEAN COOK: There is not much method about it. When you have the right kind of milk, rennet, a little common sense and enough heat, it is easy to make. The trouble is, we have in the creamery sections a great deal of milk that is not good. In

the first place, we are delivering it in big cans; they are just as bad as they can be. The milk does not have the necessary care.

VOICE: We must try to make a soft cheese that will compete with those fellows who are making the washed curd.

DEAN COOK: The competition is all right. What we want is the same sort of material that your competitor demands and that you do not get,—clean milk. We do not get it. You have competition on one side that you never will get rid of, and then on the other side the material to work into cheese is not equal to that which your competitors are buying; which is unjust for you and me.

MR. LANG: Do you at any time get milk that has not been skimmed a little at home before it is brought to the factory? Would it not be a good idea for the Commissioner of Agriculture to have linen posters printed, calling the attention of the farmer to the fact that every time he takes a cup of cream he is robbing someone. He is not entitled to a spoonful of that cream, but thinks it is his right;—and sometimes it is two or three cupfuls. I would suggest that the association go on record as in favor of the Commissioner having that short clause in the law and having it posted on every factory in the state.

MR. E. F. BURKE: I think if the dairyman would use a Babcock test it would help him to a considerable extent.

CHAIRMAN FISK: This brings up another question, the use of the Babcock test in the cheese factory, because milk is of different qualities. Some patrons furnish rich milk and some poor. Ought we not to buy the milk on quality basis and is not fat the determining factor with regard to cheese-producing qualities? It also seems to me that the cheese industry at the present time is in a very dangerous position. Not long ago Mr. W. W. Hall told me that a few years back we had a very good export trade in cheese. We thought then that we could fool the Englishman by putting in other fats for butter fat, making a filled cheese. We lost our export trade in cheese simply because the Englishman would not buy those substitutes. Now we have a demand for home-trade cheese to be consumed in this country. I believe that the consumption of cheese in New York is going to increase in view of the high prices of meat, and cheese is

about the only balanced food that can be used in substitution for meat. Now are we, as cheesemakers of the state, going to go on and try to fool the people of New York? What are we going to do with the skimmed milk cheese and the washed curd cheese; or are we going to make simply a full milk cheese? Branding is a very good thing, but as Mr. Frederiksen brought up, we ought to have some way to protect the consumer. Possibly the best way will be to start with the factory and brand the cheese what they are in the factory.

MR. SWEETLAND: It would be impossible for cheese factories to pay for milk on the Babcock test until the state law compels them to do so, because the patrons will not allow it.

CHAIRMAN FISK: You believe if a man has rich milk he ought not to get paid for it on quality basis?

MR. SWEETLAND: No; I am saying you must face the condition as it is; and the farmer will compel the factory to pay for the milk by measure as he wants it done. As has been suggested, if one-third want to buy by Babcock test and two-thirds by weight and the manufacturer does not pay by weight, they will put up a cooperative factory beside him. Wherever in the western part of the state they have tried to buy on the Babcock test basis they have invariably, I believe, gone back to weight, simply because a majority of the farmers have a low-test milk.

Mr. Richardson was talking about the quality of the milk and sanitation of the factory. I approve heartily of all that the department has done along that line, notwithstanding the fact that they have stepped on my toes sometimes. But I have always believed and maintained that they have begun at the wrong place. The average cheesemaker can make good cheese if he has good quality milk. The trouble all the time is to get good-quality milk. I believe the beginning point of the sanitation question should be at the farm. It should be done right along at the same time that the department men inspect cheese factories; they could go right around to the dairy farmer and compel him to put his barn and his surroundings in the proper condition. If the inspector of the department will go around and inspect every dairy he will see that that is the place where the work needs most to be done.

MR. RICHARDSON: I wish to say that the department has given attention to this work and is giving attention to it, but I

do not believe that this lessens our responsibility to the factory itself. I think if a slovenly farmer should take dirty milk to a dirty factory he would be fully as likely to bring the same quality milk the next day, but not if he found everything in good condition. The requirements would provoke his pride to deliver better milk. I do not think we should exonerate the factory because we went to the dairy first.

MR. ISBELL: We have taken in milk on the Babcock test, and you could not vote it out anyway. It has been the only means of building up our creamery. When the farmer changes his herd he changes to better cows, and we have built up the ratio by testing cows for farmers, etc., so that our creamery stands among the first.

MR. FREDERIKSEN: I believe we are here for education. That is better than too many laws.

MR. HARRIS: I do not like to sit through this morning without letting you hear from the western part of the state. Mr. Richardson stated that he made the finest cheese in the United States, and if he had mentioned Alleghany or Cattaraugus county I would not have said anything. But I contend that we make just as fine cheese as Mr. Richardson makes up in his county. In fact, notice the New York bulletins when there are any special prices — I think Mr. Lang will bear me out — they say, "Why, you cannot buy western New York cheese under such a price,—" about half a cent more than quotations. I am on two of the best markets in the United States. When the report from the Cuba or Salamanca market is 16 cents, it is 16 cents. They have the reputation of being the two correct markets in the whole United States. When you report a cheese market, report it what it is. We think that we make as fine a cheese as is made in the United States, and I also think that we put them up in a nicer shape than Mr. Richardson does. We make a box with just one end cover; and our flat boxes are made much nicer. Occasionally a dealer will make boxes so thin that if you hold them up to the sun you can look through them; but those exceptions are very few.

Now I am not a skimmed cheese man nor a washed curd man. I agree with Mr. Richardson that they should be branded for what they are. I cannot understand why, with all the intelligent men we have in the State Dairy Association, we cannot catch those

fellows if they are fooling people with skimmed cheese as well as with oleomargarine. I seldom buy washed curd cheese, but this fall I shipped a particular customer fifty boxes. He is a big retailer and cuts them. Shortly he ordered fifty more, and said: "I don't want any more like the kind you sent. I want the state brand and I will not accept any more such cheese at any price." The makers in this country are to blame for poor milk. Now if Mr. Maker, when he gets a poor batch of milk, will send it back it will soon be stopped. The trouble is, the fellow that owns the factory two or three miles away will take it in. You ought to stand right up, and when your neighbor sends back milk say that it is not good enough for you either. That is my theory. Furthermore, many cheesemakers do not live up to the law in putting the state brand on cheese; sometimes the state brand is on the top, sometimes on the side, with nothing on the outside of the box. Now we have got to get numbers and put on all those cheese, and that is a lot of work. Makers are careless about those little things. I claim cheesemakers should brand in accordance with the law.

PROF. MCKAY: I was a little bit surprised at the discussion here to-day on skimmed cheese and water-soaked cheese. With the present agitation about the high cost of living we have a duty of 6 cents a pound on cheese coming into the country. If for some reason the present administration should cut that duty our markets would be swamped with Canadian cheese. The cheese we get in the west are exceedingly poor. In Chicago, in particular, it is quite a common thing to get a cheese from which the moisture evaporates when cut, leaving it like a piece of bone. Another fault I find with your cheese is that it is sour, pasty, weak in body. That tendency to incorporate water is a bad one. In New England they eat cheese as a food. Rightly made it is one of the most balanced foods we have, and I think every effort should be made to make the very best cheese we can. Get rid of the loose moisture; be careful about breaking up the curds and giving that hard texture which is not desirable. I operated a factory at one time. I think using the Babcock test encourages the farmers to keep better cows, and it is not the right principle to expect a man with a Jersey or Guernsey to sell his milk against the Hol-

stein for making cheese. If you would adopt the Babcock test throughout it would tend to improve the quality of your milk and also encourage the farmer in taking better care of his milk.

MR. HOUGE: I am intensely interested in this matter of better milk. I do not wish to take your time, but I know that I voice the sentiment of every man who is interested in the cheese business in New York when I say that that is the most serious problem that confronts us to-day, the poor milk delivered to us. You may say all you want to about it being our duty to send such milk back. We cannot assume that responsibility. Factories are operated to-day by men who are not always competent to stand up and tell you what kind of morning's milk they are getting. We do know it to be a fact that many of the farmers and many of the places where they keep milk to bring to the cheese factories and creameries would not be tolerated for one minute if the milk was to be sent to the city. I would like to ask why the state department should be less vigilant than the city, the requirements less than the city or municipality. Why should not they demand the same kind of milk, the same conditions about the barn, that the city would? It is to be manufactured for the same purpose, to eat. The point is, first, with regard to the Babcock test, we cannot take any concerted action. It is unconstitutional to say that every man shall buy milk just as I see fit. I understand it is beyond our control to say every man shall buy milk by the Babcock test. We do believe that it is better to encourage the Babcock test, but if patrons say they will not deliver by the Babcock test that settles it.

With regard to the sanitation of skimmed cheese, I agree it should be referred to a committee for consideration and further investigation. It is a very serious matter, and some permanent action should be taken to better conditions along that line. I make a motion to that effect.

DEAN COOK: I have never attended a cheese meeting at which the spirit seemed so right as now and it seems to me it is the psychological time for these cheese men to appoint a committee representing the different phases of the cheese interests, the producing and selling ends; that committee to report to the legisla-

tive committee and then one year from now report to this association with such recommendations as it may see fit concerning these problems that we have been discussing to-day.

MR. HOGUE: Before taking my seat I made a motion similar to that of Dean Cook. I withdraw my motion because I consider his better. I second Mr. Cook's motion.

Motion carried by vote and the following committee appointed: H. E. Cook, of Canton; S. B. Richardson, Lowville; George E. Hogue, Arcade; H. C. Lang, New York; F. N. Godfrey, Olean.

THIRD SESSION

WEDNESDAY, 2 P. M., DECEMBER 11

Meeting called to order by Vice-President H. C. Elwood, of Buffalo, N. Y.

MR. ELWOOD: Ladies and Gentlemen: It will be your privilege this afternoon to listen to Prof. G. L. McKay, of Chicago. I now take great pleasure in introducing Professor McKay, who will talk to you on "American Butter."

AMERICAN BUTTER

PROFESSOR G. L. MCKAY, CHICAGO, ILL.

MR. Chairman, Ladies and Gentlemen, and Members of the New York State Dairymen's Association: I am much pleased to have the opportunity of meeting with you at this time. I certainly deem it an honor to talk in the Empire State on any subject pertaining to dairying, as your state was the first on the continent to take up this line of work. Your early teachers along dairy lines have not only made your own state famous, but have made the United States as a whole famous throughout the dairy world. Such men as Professor Willard, Professor Arnold, the Hon. Harrison Lewis and Mr. MacAdams were the pioneers, and their names at that time were household words in the homes of those interested in dairying.

I will endeavor to talk for a time upon "American Butter." I am very much in favor of the production of butter, on the ground that it tends more to soil conservation than any other line of agriculture. In addition to this, it is one of the most profitable pursuits when carried on intelligently.

The following editorial appeared in Hoard's Dairyman of November 15th, this year:

"It is well for all dairymen to know just what is the reflex effect on their soil of the methods they use.

"Hoard's Dairyman has often called the attention of its patrons to the danger of soil depletion that comes if the whole milk is taken from the farm. If the dairy farmer knows the facts as they actually exist and provides for it by the purchase of extra fertilizer, then all well and good. But if he does not, in a few years he has greatly injured the producing power of his land. The older dairy districts of the eastern states, where the whole milk was taken from the farm in cheese making or milk shipping, shows this incontestably.

"The following figures show the real condition of things where the milk is all taken from the farm. Take a cow, giving, say, 5,000 pounds of milk, there will be found 29 pounds of nitrogen, 9.5 pounds of phosphoric acid and 8.5 pounds of potash. The market value of these fertilizing elements is approximately \$5.50. That means the loss in fertility to the farm per cow for each year. With a herd, say, of twenty cows, that means a drainage of \$111.40 a year. Now, if the farmer is wise, knowing these facts, he will provide for these elements to be put back on the farm each year. If he does not, he will soon have a run-down farm, even if he is keeping cows.

"It may be said that the growing legumes, such as clover, alfalfa, cow-peas, etc., will keep up the nitrogen supply of the soil, provided these crops are properly handled."

Now, in regard to growing leguminous crops, such as clover, alfalfa and cow-peas, I would say that the growing of these crops will not benefit the farmer in the least, unless the crops are fed to the animals and the manure returned to the land. The nitrogen is practically all in the stems and leaves of the plant, and in addition to this, in some of these plants, the roots penetrate very deep in the soil. Particularly is this true with alfalfa, which would naturally exhaust the soil as quickly as any other crop; therefore, the great benefit comes from feeding these crops to live stock.

In addition to what Hoard's Dairyman has said about the re-

moval of fertility, I will quote from an accurately prepared table on this subject, which is used by one of our experiment stations:

“ In the sale of \$100 worth of milk containing 4 per cent. fat at \$1.00 per hundred, \$10.25 worth of fertilizing material is removed from the farm. In the sale of \$100 worth of cream containing 20 per cent. fat at 25 cents per pound, you remove \$1.52 worth of fertilizing material. In the sale of \$100 worth of 40 per cent. cream, and this is practical, at 25 cents per pound, you remove only 56 cents worth of fertilizing material. In the sale of \$100 worth of butter fat at 25 cents per pound, you remove only 14 cents worth of fertilizing material.”

Carbohydrates, oil, starch, etc., which make up some 90 per cent. of all our plants, come from the air and water, and when a man is marketing fat, he is therefore really marketing the air and water part of his crop, and is keeping the fertility part at home.

Soil conservation must receive more consideration in the future than it has in the past. We are importing annually \$15,000,000 worth of potash alone from Germany. Denmark, which is one of the greatest butter producing countries in the world, is regarded as a model of farm management, both from the standpoint of conservation of soil fertility and the profit per acre. It is said that the Danes import our concentrated feeds which are rich in protein, not so much for the profits they may derive from the sale of their butter, as for the fertility these feeds add to their land.

In my judgment, the buttermakers of America, in skill and knowledge concerning their business, are the equal, if not the superior of any buttermakers to be found in any part of the civilized world. Skill and knowledge availeth nothing unless they are constantly applied. We are in the habit of throwing bouquets to ourselves on the ground of our superior knowledge about things. Occasionally we see a maker who will put forth special efforts for a certain contest. He may even sit up all night and ripen his cream. The medal he may win will possibly give glory for the time being, but if he falls back — which is sometimes the case — and produces an irregular grade of butter, his spasmodic effort is of no benefit to the patrons of that creamery.

Every commission man knows that if he can get butter that will

score between 91 and 93 per cent. and can depend upon the grade keeping up to that point, he can command the highest price for such butter. Probably 95 out of 100 consumers would not notice the difference between 91 and 96 per cent. butter, if served on the table. If butter is sweet and clean, free from mottles, has no objectionable odors, and the body is reasonably good, it will satisfy the consuming public.

Some years ago, when visiting the leading butter dealers of England, for the purpose of ascertaining how the American butter compared in the English market, with that of other countries, particularly with the Danish butter, which sold for the highest price, I was told that sometimes they received butter from this country that was superior to the Danish butter, but that our butter ran so irregularly in quality that they could not establish a permanent trade.

On the other hand, the Danish butter, although not extremely high in quality, was always uniform, or as one merchant said, "If we sell one of our customers a dozen kegs or firkins of Danish butter, we know that the quality throughout will be such that it will suit his trade and he will come back again, and that is all that is desired."

I will briefly analyze the American butter as found in our markets. To commence with, we will take the package, or the American butter tub. In my judgment, it is the most abominable, unsightly package that was ever used for butter by any people. I was asked a number of times by English merchants, why the Americans persisted in using the tub. Owing to its shape, it cannot be cut into prints satisfactorily, like the butter that is packed in boxes. It cannot be packed in as small space for transit as the square package can. Also, the chances for breaking off covers in transit are at least five times greater with the tub than with the box, hence the railroads would welcome a change to the box.

The difference in cost of package in favor of the box would amount — I think I am safe in saying — to about a million dollars annually to the producers in this country. We are badly in need of a standard package that would sell in all parts of the country the same. The Pacific Coast trade demands the box entirely, while the East here wants the tub. One of our members

wrote that it cost him 22 cents for a box complete, including wax liners and parchment. The said box would hold 80 pounds of butter. While on the other hand, it would cost him 31 cents for a tub and liners, said tub holding 61 to 63 pounds. Prices of 68 to 70 pound boxes in the West vary from 14 to 15 cents, that is in the knock-down form. It costs from one to one and one-quarter cents to put them together.

One of our large manufacturers informed me that through a mistake a carload of butter in tubs was shipped West and a carload of butter in boxes shipped East. The butter in both cases sold 1 cent below market price, because it was shipped in wrong kind of packages, so we can readily see the benefit to be derived from a standard package. There was no defect in the butter in either case, but the package did not suit the trade.

There should be no virtue in a package, but the one that gives the best service, and especially if it cost less, should be adopted. This is something that our commission men and dealers should seriously consider.

One of the chief defects of the American butter is its irregular quality. This is largely due to the lack of a uniform system being followed by the makers throughout the country. Many makers want to be a law unto themselves, that is, each has his own idea of making butter; therefore, there seems to be no set rules followed by the American maker. Some use starters in cream ripening and others do not; some pasteurize their cream at a high temperature, while others pasteurize at a medium low temperature, and still others at a low temperature.

If I were to ask the makers here what effect pasteurization had upon cream, possibly 95 per cent. would answer that it destroyed the bacteria, and this answer would be absolutely true, so far as it went.

If you ask me what effect pasteurization has upon cream, I will tell you frankly that I do not know, and I do not know of any experiments that have been conducted that show the chemical effect on the fat and other constituents of cream. If you heat cream that is partly sour, from a very low temperature to a tem-

perature as high as 185 degrees in the one heating, there is grave danger of injuring the quality, as some portions of that cream must necessarily reach a temperature of over 200 degrees F., that is, the portions of the cream that are next to the plate of the pasteurizer will reach that temperature. The action of this excessive heat on the fat and other constituents, no doubt, imparts to the cream bad flavors that are transmitted to the butter. I am not opposed to pasteurization, either high or low. I maintain, however, that the process when rightly done is a very delicate operation. If cream is to be heated to a high temperature, I am firmly convinced that we should use two pasteurizers in the process of raising the temperature to 185 degrees. In the first pasteurizer, the temperature should reach from 110 to 120 degrees. This increases the fluidity of the cream so that it can be heated in the second pasteurizer without using such excessive heat. Where a method of this kind is used, the exhaust from the last pasteurizer can be attached to the first for bringing up the temperature to 110 or 120 degrees, as desired, thus economizing in the use of steam.

I notice that some of our large creameries are using this method and getting excellent results.

Where pasteurization is done in the vat, as is practiced now in many creameries, a temperature of 150 to 155 degrees is sufficient, especially if cream is to be held 15 to 20 minutes at this temperature. I have also seen excellent results from this method of operation.

I have been scoring butter for some time in experiments that are being conducted at Perdue University. In the last scoring, I observed a difference of about three points in favor of pasteurization as against butter made from the same cream without being pasteurized. I understand that the cream was very sour in both cases. The temperature in this particular case was 160 degrees.

About twelve years ago I conducted a series of experiments at Iowa State College with sour cream, with the intention of publishing a bulletin on the final results. Knowing that only a small portion of the milk sugar was converted into acid during the souring of cream, I took up the method of neutralizing this acid

with various kinds of alkalies, using lime, precipitated chalk, soda ash, etc., and then pasteurized the cream, using a pure culture, and produced a pure acid in the cream. The result was that I improved the quality of butter a great deal. After completing my material for the bulletin and thinking the matter over further, I decided not to publish it, owing to the fact that it might make farmers more careless in handling their cream. Many of the students present during these experiments, no doubt, took up the system at home. The result is that in the West to-day, neutralization is carried on quite extensively. It has had the effect of cutting down the loss of fat in buttermilk, where pasteurization has been employed—especially is this true when some lime has been used. It has the effect of keeping the curd in a soft condition while it is being pasteurized.

If you pasteurize very sour cream unneutralized, the heat precipitates the casein which carries off with it large quantities of fat in the buttermilk. The quantity of lime used in neutralizing is so minute that it has no other effect but to neutralize the acid. This lime, of course, dissolves and passes off in the buttermilk.

In experiments conducted where lime had been used in comparison with butter made from the same cream without lime, it was seen from the chemical analysis that practically no difference in the chemical composition of the butter existed.

Dr. Babcock and Dr. Russell found in their experiments with pasteurized cream that where cream was heated to 160 degrees and above, the calcium salts were removed, which gave the cream a very thin appearance, so to restore the appearance of the cream they brought out viscogen, which is composed of cane sugar and lime. In this case, the consumer took the lime direct. This, however, is in line with the German scientist's recommendation that the people should consume more lime. Our physicians recommend lime for our babies.

The ideal way, however, is to have cream in so sweet a condition that it can be pasteurized successfully without the use of neutralizers.

I do not know what your conditions are here but in the West, where the hand separator is used extensively and competition is keen, it is about impossible to get cream in an ideal condition,

hence, if I were operating a creamery where cream came in very sour, I would neutralize and pasteurize and use pure cultures and I would turn out as sanitary a product as was ever made.

A lot of foolishness has been published concerning neutralization, such as rotten or stale cream being used for butter. The fact of the case is that lime will not remove any of these odors.

The large creameries make up their poorest grade of cream by itself and sell the butter according to quality. If the quality of the raw material is extremely poor, you cannot make a good finished product under any process, and the same principle applies to the manufacture of any kind of goods.

At one period of my life, I thought I knew a great deal about cream ripening, but since I left college and have come in contact with some of the large factories, where they make 50,000 or 60,000 pounds daily, I have had my opinions somewhat changed. I have in mind two creameries and their methods are not at all similar, yet they are both turning out an excellent quality of butter. The one plant pasteurizes to a temperature of 155 to 160 degrees and holds the cream 15 minutes at this temperature, then cools to churning temperature, adds a big starter and churns the cream as soon as the fat is sufficiently chilled to get an exhaustive churning; while the other heats to 185 degrees in a double pasteurizer, then cools at once to 60 degrees, adds 10 per cent. of a good starter and carries on the ripening until the cream shows an acidity of 33 or 34 degrees, Mann's test. The cream is then cooled, held over night and churned next morning. In both plants the greatest care is exercised in every detail, such as uniform temperature, the preparing of excellent starters and cleanliness to the extreme. The result is that they are both making a high, uniform grade of butter from day to day.

We have another creameryman in the West whose butter created quite a sensation in our Chicago market last winter owing to its high, uniform quality. This creamery is located at Minneapolis, Minn., and is called the De Sota plant. The maker was using what is known as the Stanley system of cream ripening. I believe Mr. Stanley has applied for a patent on his process. It consists of blowing air through the cream while it is ripening. The theory advanced by Mr. Stanley is that the oxygen from the air

passing through the cream aids the development of the desired lactic acid bacteria and retards or destroys the putrefactive bacteria in the cream. This is a beautiful theory, and a theory about which very little is known.

While I am not in a position to make a positive statement regarding his theory, I think the chief virtue lies in driving out the volatile acids and gases by a mechanical process and substituting for them oxygen from the air. By this means, a lot of objectionable odors pass off and the medium is rendered less favorable for the development of putrefactive bacteria. Various systems have been used for aeration of cream and milk. Mr. Stanley's method may be more effective owing to the mechanical force that is used to drive off gases, also the purity of the air used is more under control and less liable to contamination from undesirable bacteria and odors. In his system, he draws the air usually from above the building through a galvanized pipe, by means of a large fan. The air is expanded or heated by this process. It is then passed through a steel tank partly filled with cold water, and thus becomes purified and cooled. The air passes from the tank into the cream vats, by means of two sanitary inch pipes, extending the whole length of the vat. The lower sides of the pipes have small perforations about the size of an ordinary pinhead, through which the air is forced. The cream is slowly blown during the ripening process. It is also blown for a short time while it is being held in the retarding vat, after it has been pasteurized and before it is cooled. The principal virtue, Mr. Stanley claims, is the addition of the oxygen to the cream.

Whether Mr. Stanley can get a patent on this process or not, I am not prepared to state. I do know that various systems have been in use, for the purpose of aeration, for a number of years. In using a system of this kind care must be used not to blow the cream too hard, as there is danger of churning. The pressure of air is regulated by a valve above the vat.

I have not the time to go into a detailed discussion of starters. A good, clean-flavored starter is one of the most important things in butter making, and unless a maker has the ambition and ability to prepare and care for starters right, he had better not use the

starter. I am thoroughly convinced that bad flavors are transmitted frequently to butter through such a medium.

I visited a very fine creamery about a year ago. The plant was a new one, and the equipment was about complete. The maker was one of the wise, talkative kind. When examining the butter he had on hand, I found the quality very poor. I finally asked him to let me taste his starter, which he did. It was over-ripe and in very bad condition. I called his attention to this very forcibly, and he remarked that the starter would come back all right by renewing it, forgetting that he would be making poor butter during that time. Now, this same maker could write columns about butter making, yet he could not produce a uniform grade of butter from day to day, simply because he neglected to attend punctually to the little details.

A starter is usually in the best condition for use just after it thickens. If a maker is not ready to use it at that time, it should be cooled immediately and held at a low temperature. Under ordinary conditions, the larger the per cent. of good starter used, the better will be the result. I mean by this, anything up to 25 per cent. Especially will the large per cent. give better results, if cream is to be churned after pasteurization, without being ripened. When cream is ripened, 10 per cent. will give good results.

In the churning of cream, no set temperature can be given. I prefer to churn in 35 or 40 minutes, when the churn is half or two-thirds full of cream. I would churn in granules as large as corn. There is not much danger of over-churning. If the butter even rolls up a little, it will not do very much harm. After the butter is churned, it is well to let it stand at least 10 minutes before drawing off the buttermilk. This allows small particles of fat to rise to the surface and mix with the mass of butter. In other words, it gives you a little more exhaustive churning. After the buttermilk has been drawn off, water should be added to equal the amount of buttermilk removed. Under ordinary conditions, it is better to have the water of the same temperature as the buttermilk. This is a case, however, where common sense should be used. If butter is a little soft, the water should be colder, so

as to harden it a trifle. I prefer, if possible, to have butter gather in an oblong, rather than a round granule.

A round granule has a tendency to produce leaky butter. In addition to this, it usually runs very low in moisture content. The temperature of churning is something that has to be governed by the season of the year or the feed consumed by the cows. In the early spring, or when the cows first go on grass, the percentage of olein fats or low melting fats increase, and the result is that butter usually gathers soft, and unless special care is exercised there is danger of incorporating more moisture than the law allows. During the rainy periods in the summer, we at times have the same condition, to a certain extent. The water in butter practically all comes from the milk. This is one of the reasons why the man who is making sweet or unsalted butter has difficulty in keeping within the limits of the law. The judge in deciding against the government in the Milton case that was tried in the Circuit Court of the United States, wisely stated that the process of butter making was a process of elimination, rather than a process of incorporation. The first elimination is the separation of the skim milk, the second elimination is the process of churning or the separation of the buttermilk, the third elimination comes after applying the salt and the free moisture escapes.

When salt is applied to butter it has a tendency to mix with the moisture, in other words, salt seems to have an affinity for water; the moisture and salt coming together form large beads or drops of water in the butter, which is readily pressed out during the process of working. That is the reason why salted butter can be kept more easily within the limit for moisture content.

I read a statement some time ago purporting to have come from the Commissioner of Internal Revenue, to the effect that all the water could be worked out of butter, and that the water in butter really came from an external source. If he is rightly quoted, it is a very unfortunate thing that we have for Commissioner of Internal Revenue, a man who has such a limited knowledge of the butter business.

Some years ago we had the question of butter standards up. I practically stood alone for a 16 per cent. moisture or an 80 per cent. fat standard. Since that time, I am pleased to note

that practically all the dairy experts of the country are favoring those standards. The European dairy experts have recommended a standard as high as 18 per cent. moisture. In the same recommendation, they stipulate that butter must contain 80 per cent. fat. Now, this would be impossible for the United States under the present methods of salting. Undoubtedly the reason these men make such recommendation is that their butter runs so light in salt. Unsalted butter should have an advantage as to moisture of at least 1 per cent., and I am not sure but what it should have more. Unsalted butter with a moisture content of 16 per cent. will contain 83 per cent. fat at least, as against 80 per cent. fat in salted butter, where 3 per cent. salt is used with the same per cent. of moisture, therefore, we can see the justice of permitting a little more moisture to exist in the unsalted butter.

In salting and working butter, various methods are used. One method quite common in some creameries, is to bring the butter up on rolls, make a drain through the center of the butter with the paddle, leaving the ends closed, spread the salt as evenly as possible through this drain, then pour some water over the salt and put the rolls in gear and work the butter about one-half or two-thirds the amount that is necessary, then make a moisture determination. A little water should be added to dissolve and wash down any salt that may adhere to the rolls, the churn closed and the working continued up to the required time. If moisture is found to be high, the doors of the churn should be left open a little, so the free moisture can escape. Six pounds of salt to one hundred pounds of butter fat will give usually 3 to $3\frac{1}{2}$ per cent. in the finished product.

I have known others to work the free moisture out of the butter by working it a few times through the rolls, then weighing the salt and having it soaked in water that has the same temperature as the butter. The salt and water are then placed in the drain made by the paddle in the butter and the butter is worked. In this case less salt is used, about $4\frac{1}{2}$ pounds to every hundred pounds of fat.

The salting of butter is largely a matter of common sense, where judgment must be used in getting an even distribution throughout the entire product.

One of our good Chicago creameries sifts the salt on the butter when it is in granular condition, without gathering it on the rolls. The churn is then revolved on slow gear, from five to eight times, without the rolls being in motion, thus the butter and salt are thoroughly mixed. This maker maintains that the butter does not have to be worked so much this way, since the salt is practically dissolved before he puts the rolls in gear. He usually adds a little water to the churn after the butter has been worked a while, to dissolve any salt that may adhere to the rolls. The butter takes up this free moisture in the working.

At the present time, it is not a safe proposition for anyone to pack butter until every churning is accurately tested for moisture. There are a number of tests on the market that will work very accurately and quickly.

I have briefly covered the butter business in the space of time usually taken up for a discussion of this kind. One thing that would help promote dairying probably as much as anything else, would be for the butter and cheesemakers to make a special study of economic production, so that these factories could be a center of information for the patrons and farmers of that community. The maker of the future has got to be a bigger man than the maker of the past. New problems are coming up all the time, and he must grapple with all phases of the dairy question.

At the present time we have a duty of six cents a pound on butter and cheese coming into this country. This duty no doubt was placed on these articles by the federal government with the view of stimulating the production and growth of our dairy industry. We find, however, by a careful study of our statistics, that our cow population is not keeping pace with the human. During the past ten years, the human population has increased about 21 per cent. as against 14 per cent. for our cow population. This is a serious problem.

I recently heard one of our dairy educators make the statement, that if something could be done to remove the drudgery from dairying, it would increase. I do not like that term "drudgery." Any business that is carried on along profitable lines very seldom appeals to us as drudgery. I can readily understand how dairying would not appeal very strongly to a

man who keeps cows that possibly do not produce over 130 to 140 pounds a year, which is the average of cows kept in this country. Dairying might appeal to him as drudgery, but to the man that has a herd that produces 300, 350 or even 400 pounds, I guarantee that dairying does not appeal to that man as drudgery. Such herds are possible and practicable.

I visited the European countries some years ago, and found that on the high-priced land everywhere dairying was carried on extensively. Not only this, but I was told that land in the old dairy sections was more fertile to-day than it was fifty years ago, notwithstanding the fact that it was continually tilled. Most of this land sells for from three to four times as much per acre as land in this state, yet their soil is naturally not any better, and the markets are not much better, if any.

Cooperation among farmers for bringing in better sires, which would mean better herds or better cows, I think would stimulate dairying probably more than anything else that could be done. The benefit of good sires has been appreciated by the men who own the large ranches in the West; and the large railroad corporations have in some cases brought in good sires of different breeds and given them to the people along their particular roads for improving their stock, so that the tonnage of live stock would be increased in the near future, in fact, some of the best stock that is produced on our Western ranches was obtained in this way.

The State of New York, owing to its adaptability to the growth of various forage plants and to excellent climatic conditions, in addition to an abundant supply of pure water and close proximity to some of the best markets in the world, should be one of the leading dairy sections of the world. I thank you.

CHAIRMAN ELWOOD: The meeting is now open for any questions. I know Prof. McKay will be glad to answer them.

MR. BUNDY of MERIDALE: I would like to ask Professor McKay what he considers the fat standard.

PROF. MCKAY: I consider 80 per cent. a fair and just fat standard for this country. Eighty per cent. fat is practically the standard we have at the present time; that is, normally speaking, the casein present in butter runs from about $\frac{3}{4}$ to $1\frac{1}{2}$ per

cent.; depending mostly on the washing process. Adding to that 3 per cent. salt would allow you about 16 per cent. for moisture. There is another question at the present time that is agitating some of the makers, as to whether butter should be left under the Internal Revenue Department or put with the Pure Food Department. The principal difficulty in the way would be that the Pure Food Department has no jurisdiction over butter except when it becomes interstate traffic. If it was permitted or left under the pure food law in the state, a manufacturer could load his butter with water or salt. Some men are getting wise to this already. I am not an advocate of this, although I am sometimes accused of being a high water man.

VOICE: Has not the manufacture of oleomargarine been an aid to the buttermaker by compelling competition?

PROF. MCKAY: I would say not. Good butter never competes with oleomargarine; that is, if oleomargarine is sold for what it is. If you eliminate the butter fat from oleomargarine you would have tallow and lard mixed together, which would not give you very much flavor. I presented before Congress the different formulas used in the manufacture of oleomargarine, and where only milk, instead of butter was used, oleomargarine was produced for 8 cents a pound — about $\frac{1}{3}$ the cost of butter. Where they used 25 per cent. butter it cost about 14 cents, if I remember correctly. The only question is the color of the fats. I am entirely willing that oleomargarine be sold as oleomargarine but we must have a line of demarkation between butter and oleomargarine or one will crowd the other out. In the discussion that took place before the agricultural committee it was estimated I believe by the Commissioner of Internal Revenue that 50 per cent. of the oleomargarine was not sold for oleomargarine but for butter, at butter prices. That is where the fraud comes in. I want to say a few words in behalf of Mr. Flanders. He has worked very actively with our committee in Washington and has rendered a lot of valuable service in their interests. His counsel concerning laws and regulations we have found to be good and sound.

MR. STONE of SOXYEA: I would like to ask if the United States government in their specifications for purchasing butter for the army and navy specify the number of degrees of heat for

pasteurizing the cream. And in connection with that I would like also to ask if the United States departments use butter for their navy and oleomargarine for their soldiers.

PROF. MCKAY: I was not aware that the United States soldier ate oleomargarine until last week. A young man who is connected with Fort Sheridan, an officer, told me that he did not eat any butter. The navy has butter put up and the cream is pasteurized, if I remember rightly, to 160 degrees. I am not positive of that but I think it is 160 degrees.

MR. MATTISON: Is it not about time we did something so that the rotten butter made around the country would be made into axle grease and not into renovated butter? We have the law but we cannot hold them down.

PROF. MCKAY: The fact that we are making renovated butter at the present time is a disgrace to our civilization as dairy educators. The butter or the cream that is first used in making renovated butter is just as pure as the butter that I scored 96 this afternoon. Renovated butter comes from the farmers. Many of our farmers' wives persist in making butter; some of them make excellent butter and others do not. The result is that the groceryman in turn gets rid of his groceries and sells the poor butter to the renovating factory. The factoryman works on the theory that the fat itself contains no flavor. It is usually passed through a tank and air blown through it and purified. There is a restriction on that butter; it is under government inspection and branded and sold just for what it is. I am sorry that any is made, but we have the thing under control as well as we can. I do not think it is sold very often as genuine creamery butter.

MR. J. B. HOWE of VERNON: What can we best do with the oleomargarine question?

PROF. MCKAY: At the present time there are two bills before Congress. Owing to the cry of the high cost of living there was a feeling worked up among the labor unions by the oleomargarine interests, that the ten-cent tax was a hardship upon the poor man of this country, when in reality only two per cent. of the oleomargarine made in this country paid the ten-cent tax. The rest of it came under the one-fourth per cent. tax. That fact they did not mention. To meet this argument the dairymen prepared a bill

lowering the tax to one cent the same as the Lever bill. The Bureau of Standards in Washington last year finally discovered a test whereby they could measure the color. So we got together a lot of butter made at various experiment stations in the United States from the different breeds of cattle, Holsteins, Ayrshires, and the breeds that usually produce the lightest colored butter. We also got the Danish card system of measuring color, the standard No. 9. In Denmark they let manufacturers of oleomargarine color to a certain shade of yellow. In comparing or measuring these shades we found that the lightest color was the Ayrshire, 45 per cent. white, which would naturally be white to the naked eye. We fixed the standard at 55 per cent. white for oleomargarine. That is the natural color of that product, or what appears white to the naked eye. Now the fight is between what is known as the Lever bill, and the Haugen bill. The Lever bill permits coloring just as high as you like; the other permits it to go to a certain shade. The dairy bill makes the tax on the dealers lower than the Lever bill. The great trouble is to prevent their serving the product to guests in hotels and restaurants. I cannot see how we can prevent it if they are permitted to color it yellow.

Another question. They advertise their product as containing from 25 to as high as 90 per cent. pure creamery butter. It is a hard proposition for the best chemist in the country to separate those fats just to a few per cent. The result is that they may advertise their product as containing 50 per cent. butter when it only contains five. One case of that kind has been tried in Michigan. In the dairy bill before Congress at the present time they are forbidden to mix butter at all with their product, they may, however, mix 5 per cent. of fat coming from milk, and in that way it would be impossible for them to advertise their oleomargarine as containing 30 to 50 per cent. of butter fat in order to deceive the people.

MR. FREDERIKSEN: The fight now going on in Washington is a very serious one under the administration that is coming in. I fear very much that the dairymen will be left behind. Mr. Burleson of Texas will probably have considerable influence in the discussion and he is very much in favor of oleomargarine and

the coloring of oleomargarine. Now is it not possible and would it not be well for the dairymen to work for a law compelling oleomargarine or any mixture of oleomargarine with butter to be served on the tables of hotels and boarding houses in a certain form of dish. It should be something that unconsciously calls attention of the consumer to the fact that he is eating oleomargarine or a mixture of oleomargarine and butter. They have tried to compel signs in stores and in boarding houses saying "Oleomargarine is served here," or "Oleomargarine is sold here." The boarding-house keeper would not like that perhaps; it is too arbitrary. But it seems to me it should be possible to compel oleomargarine and its mixtures to be handled and served in a simple form of dish. Would it not be well for the dairymen to work for such a plan rather than try to do anything about the color? The object is to be sure that the consumer knows what he is getting.

PROF. MCKAY: I seriously doubt whether that would be possible under our form of government. The only way we can challenge the color is by taxing it. In the present bill there is a clause requiring that a party serving oleomargarine must display a license in a conspicuous place.

MR. FREDERIKSEN: Are they not compelled now to pack in certain form of package?

PROF. MCKAY: Oh, yes; in a square package, one, three and five pounds.

W. E. AYRES, of ALBANY: Prof. McKay has advocated a larger moisture content legal limit for unsalted than for salted butter. As I understand the matter the legal limit of 16 per cent. was set with the intent of placing it so high that no manufacturer would exceed that limit under normal methods of manufacture, at the same time making it as high as might be consistent with the quality of the goods. Under our present conditions our commission men are offering $\frac{1}{2}$ to $2\frac{1}{2}$ cents premium on unsalted butter. Is it not better to leave conditions as they are than try to place unsalted butter on an equal selling basis with the salted goods by the addition of a larger amount of water which might prove injurious to the quality of the goods?

PROF. MCKAY: In bringing this up I refer to the European

Congress of experts where 18 per cent. was recommended, and the reason was the low per cent. of salt in their butter. The trouble that we are having now is keeping within that 16 per cent. limit. I have three or four cases where men have been prosecuted recently who had not been making any effort whatever to incorporate an excessive amount of moisture, working entirely by natural process. When you apply the salt it draws water to it and you get rid of the moisture. There is justice in that proposition. The per cent. of unsalted butter is small. In Washington last year I met a man who said he was supplying milk to one of the cities and that he was endeavoring to make sweet butter out of the extra milk, and he was having trouble in keeping within the limits of the law; in fact, I think he said he had been prosecuted once or twice. As far as I am concerned personally, it is immaterial to me whether you have 80 per cent. fat or 16 per cent. moisture standard. I think the majority of our schools are advocating a straight fat content, letting the moisture go. If you had but 80 per cent. fat that would eliminate the trouble with the unsalted man. He could put in as high as 18 or 19 per cent. The fat is the part of the butter that we pay for.

J. W. BEAUPRE, of WEST AMBOY: At the present time I am making whey butter, and it seems impossible to incorporate enough salt for the trade I have, the farmers at home. I have put in $2\frac{1}{2}$ to 3 ounces of salt to the pound of butter and it will not dissolve. What can I do to get conditions to take up that salt and make the butter more salty for my trade?

PROF. MCKAY: Personally I have never had any experience with whey butter. I would naturally suppose that fat gathers somewhat as in the ordinary process of butter making. If you adopt the method of soaking the salt in water about the same temperature as your buttermilk — use moist salt instead of dry salt, this will no doubt overcome your difficulty. In the past I have been accused of advocating extreme moisture. Some may remember that with Mr. Urner of the New York Produce Review I carried on a controversy over this for a time. I have never advocated trying to incorporate over 15 per cent. of moisture in butter; as a safe proposition I have always advocated not going beyond that. To demonstrate whether moisture deteriorates the

quality of butter, I took my assistant and went out into a practical creamery and made butter containing 11 per cent. moisture and that containing as high as 15.88 per cent. I sent that butter to England; I sent it on to the New York markets and had it scored critically. I put some of it in storage in New York and had Kieffer score it; and the butter that contained 15.88 scored as high if not a little higher than the low moisture butter. I had a score of 100 points in London on that butter. So I would say anything up to 16 per cent. is all right. Once in a while, however, we get butter with a peculiar condition, a churning of butter that will go beyond the limit set without any intention whatever on the part of the maker. There are a number of men, however, who know how to incorporate water by breaking up the grain, which is not a desirable process. But where the water comes naturally, I cannot see the difference. I have a man working for me who made the statement to me once that if anyone ever went beyond 16 per cent. it was done purposely. Last summer he went out to northern Iowa and had 17½ per cent. moisture in his butter without any effort on his part. Worked it over the next day and still it had over 17 per cent. I am unable to explain those things, and still at the same time I am favorable to 16 per cent.

MR. ELWOOD: Is anyone here who can answer Mr. Beaupre's question as to how to incorporate more salt?

MR. GREEN, of LOWVILLE: If you find you have 17 per cent. after working with the combination churn five minutes how would you reduce the moisture to the limit?

PROF. MCKAY: I do not know that I can answer your question. The method I would use would be to pack the butter and let it stand for a little while until it firms up a little and then bring it back into the churn again. It is due to the fine globules of moisture and the soft condition of the fat.

I heard last night a case of the same kind at Cornell, and they reduced by mixing dry butter with it.

VOICE: We have had quite a lot of trouble with mottled butter. I would like to know what the trouble is.

PROF. MCKAY: Streaks in butter are usually caused by uneven distribution of salt.

MR. SHERBURNE, OF MARILLA: In regard to the storage of butter, what causes the fishy flavor? I had some in storage last summer and five or six tubs were bad; the rest were all right. All were stored under the same conditions for all I know.

PROF. MCKAY: I am unable to answer that question. I will say that a great many theories are advanced in regard to the fishy flavor. A bacteriologist from New Zealand claimed it was due to bacterial infection of some kind; but I do not think he is correct. There is something about cream that is kept for some time, or high salting, that will bring about this flavor. I would not want to say that salt would cause it, but it has this effect. It makes all the flavors in butter more pronounced. If there are any undesirable flavors you will catch them more readily in salted than in unsalted butter. High salting has a tendency to make the flavors more pronounced.

FOURTH SESSION

WEDNESDAY, 8 P. M., DECEMBER 11

Meeting called to order by President Dollar.

PRESIDENT DOLLAR: I wish to make an announcement at this time. In former years it has been the custom at our conventions to have a banquet on Thursday night. We have departed somewhat from that custom this year and in place of a banquet we are to have a theater party, high-class vaudeville at the Grand. Tickets will be on sale at the information bureau, upstairs, all day to-morrow, and we would like to have everybody go that possibly can; would like to have you secure tickets early.

Possibly and undoubtedly no one phase of the dairy industry interests more people than the production of clean milk. The farmer is interested in the production of clean milk although the consumers think he is not. The consumer is interested, because he wants the farmer to produce high-grade milk. I am glad that we have a man here to-night who has accomplished a great deal in a section of the state that was at one time producing no better milk than the other sections, and by his efforts has gradually brought the grade of the milk to a very high standard. It gives me great pleasure to introduce to this audience Dr. Charles E. North, of New York, who will give an illustrated address on the production of clean milk.

THE MARKET VALUE OF CLEANLINESS IN MILK PRODUCTION

CHARLES E. NORTH, M. D., CONSULTING SANITARIAN, NEW YORK CITY.

Before showing the pictures I want to say just a word of introduction. I want to tell you that the whole text of the pictures is that cleanliness has a market value. The word cleanliness has been greatly abused, but we are coming to know what it means. There was a time when it had no market value, at least none that we could determine. The dairy industry has been through a great many changes and it has been a difficult matter for the men in that industry, producing milk, shipping milk, retailing milk, to tell just what foundation they could use that would be a secure foundation for their business. But the popular demand for clean milk, the movement which has taken such strong hold of the people of this country, has forced everyone in the business to-day to recognize that cleanliness is coming to have a market value. The question before the dairy industry is this: How much cleanliness is going to be demanded and what is that cleanliness worth? Is it the degree of cleanliness which we find in certified milk and for which we know to-day the market value is sometimes as great as ten cents a quart above the regular price of market milk? In other words, do we mean that we want ten cents of cleanliness added to the retail price of milk; or is the public going to be satisfied with a lesser degree of cleanliness, a more reasonable degree of cleanliness, at a more reasonable price? It is the old question after all, of quality and price; and what we all want to know — the dealer, the producer, the manufacturer — is how much quality, at what price. Now, that is the problem which I have tried to throw a little light upon.

Cleanliness has a market value. This used not to be so. In times past in the milk business the word "pure" was extensively used in connection with milk, and every dealer advertised that he sold pure milk. It did not mean then what it means now. Modern knowledge of sanitary science has sharpened our ideas on the subject of purity and of cleanliness so that we now know that these are vital matters because of their close relation to the bacteria of disease. Our standards have been raised and the campaign for better sanitary conditions on dairy farms which was

started by physicians and health authorities has at last reached the great consuming public, so that the time has arrived when the consumers of milk are not only interested, but are beginning to demand that the milk supplied to them shall be so produced that it has a clean history.

Cleanliness means labor, and labor costs money. There are different degrees of cleanliness at different prices. The cost depends much upon the manner in which the cleanliness is obtained. Such cleanliness as is obtained by the methods used in the production of certified milk adds from five to ten cents per quart to the cost of milk. This is a charge which is too great for the average milk consumer, and consequently the cleanliness obtained by such methods will never fill the demand of the masses of the people. What is wanted by the milk industry to-day is a reasonable degree of cleanliness at a reasonable cost. The milk problem, in a nutshell, consists in finding a plan whereby the rank and file of milk producers of our present generation can supply to the market a reasonable degree of cleanliness without too great an advance in the market price of milk. This is a problem which I have attempted to solve, and I shall try to show you certain principles of milk production which, if correctly practiced, will, I believe, give a satisfactory degree of cleanliness at a very low additional cost. These principles were developed as a result of my experience as a certified milk producer. Twelve years ago I believed, as did most physicians at that time, that there was only one way to obtain clean milk and that was to carry the sanitary methods of the surgical operating room into the cow stables and milk houses on dairy farms. Regardless of cost and regardless of business principles, several scores of millionaires and of city gentlemen with country residences established on private farms about the beginning of the present century magnificent dairy barns and milk houses, which carried out in most details the surgical operating room methods. These details made necessary the multiplication of employees and expensive mechanical equipment and a great expenditure of time in caring for each dairy cow and in producing and handling each quart of milk. But the sanitary results of these efforts were remarkable. Milk which by old methods contained several mil-

lions of bacteria per cubic centimeter and large amounts of visible sediment was transformed into milk containing a few hundred bacteria and no sediment. One of these dairies near Newburgh, N. Y., going into more detail in the matter of sanitary care and in the use of disinfectants than other dairies, actually produces milk which laboratory tests show contains most of the time no bacteria. When the costs of these efforts was finally counted up they made necessary the retail prices of from fifteen to twenty-five cents a quart for the bottled milk, according to its richness in butter fat and its sanitary excellence.

In my own enthusiasm as a trained physician and bacteriologist, I secured considerable financial backing and launched an enterprise of the same sort. None of the dairies mentioned excelled my own in plan and equipment at that time and none excelled mine in the sanitary results of the milk produced. I was firm in my belief that every one of the sanitary details in the long list of requirements was absolutely necessary to bring about the net result.

My sanitary dairy buildings cost more than \$30,000 and accommodated fifty milking cows. My milk retailed at 14 cents per quart and the capacity of the buildings was exhausted. There was a very old barn a few hundred feet away from the sanitary buildings provided with old stanchions and used to shelter excess cows. One day I sent a man from the dairy house with a wheelbarrow, sterile milk cans and a sterile milking pail to this old barn to milk some of these cows. I made a test of this milk for bacteria in my own laboratory located on the farm. It was on that day that I learned a lesson in common sense dairy sanitation which I have never forgotten and which has been the most important lesson in my entire experience as a student of the milk industry. Although daily bacteria tests from my own sanitary stables showed the bacteria count to be constantly very low, yet on the first day that milk was taken from the old cow stable it contained less bacteria than the milk from the sanitary barns on that same day.

For the sake of decency I had all the rough woodwork of the stable encased with tar paper and the entire interior of the building whitewashed. The floor was patched up and I filled the

stable with milking cows. Daily bacterial tests were made of the milk from this barn for over one year. Nothing was done in the way of equipment and it received no attention excepting the regular trips of the man with the wheelbarrow load of sterile cans and milking pails which occurred twice daily at milking time. All of the milk was, of course, cooled and bottled at the sanitary dairy house. Below is a tabulation of the averages for each month of the daily tests of milk from the sanitary dairy barn and from the old barn for one year:

Date	Sanitary barn	Old barn
1903.		
September	660	1,950
October	354	331
November	287	425
December	505	457
1904.		
January	355	1,244
February	1,721	3,910
March	690	4,200
April	3,300	4,600
May	1,950	10,200
June	550	1,900
July	1,260	3,500
August	1,534	4,610
Average	1,097	3,102

The standard number of bacteria allowable in certified milk is 10,000 per cubic centimeter, consequently, the milk from this old cow stable was well within the limits for certified milk. The old dairy barn was considerably worse in external and internal appearance than the barns of the majority of dairy farms in the neighborhood of my own farm. It dawned upon me that if my old barn could be used for the production of clean milk merely by becoming allied to my sanitary dairy house through the daily trips of the wheelbarrow, that clean milk could be produced in any dairy barn by bringing about the same alliance.

The machinery and equipment and the force of men at the central dairy house under the superintendence of a sanitary expert were capable of handling ten to twenty times as much milk as was produced on my own farm. My sterilizer could sterilize pails and

cans for a large number of dairy barns, and my laboratory could regularly test the milk as it was brought in to see if results were being secured. It was fully revealed to my mind that such expensive equipment and overhead charges as I possessed were not necessary for every dairy farm but only for the central station, and that a considerable number of cow stables could receive all of these benefits without any expense to themselves. This meant, of course, a division of labor.

I would like to call your attention for a moment to the number of things which must receive attention from the dairy farmer who undertakes to produce clean milk entirely under his own auspices and as an independent unit. In the table below is a list copied from the requirements for producing certified milk:

- | | |
|--|---|
| 1. Water supply, pure. | 27. Milkers, hands dry. |
| 2. Stable, one story. | 28. Milkers, clean uniforms. |
| 3. Stable, square feet air space. | 29. Milkers, iron milking stools. |
| 4. Stable, square feet window. | 30. Milkers, covered pails. |
| 5. Stable, ventilation. | 31. Milkers, warm water, soap. |
| 6. Stable, drainage. | 32. Milk, rejected sixty days before calf. |
| 7. Stable, walls tight, smooth. | 33. Milk, rejected ten days after calf. |
| 8. Stable, ceiling tight, smooth. | 34. Milk, removed quickly to milk room. |
| 9. Stable, floor tight, smooth. | 35. Milk, cooled 45 degrees in one hour. |
| 10. Stable, stall space. | 36. Dairy-house, superintendent. |
| 11. Stable, gutters. | 37. Dairy-house, employees. |
| 12. Stable, closed to outsiders. | 38. Dairy-house, white uniforms. |
| 13. Stable, manure out twice daily. | 39. Dairy-house, room for washing. |
| 14. Stable, manure out one hundred feet. | 40. Dairy-house, room for sterilizing. |
| 15. Barnyard, clean. | 41. Dairy-house, room for cooling and bottling. |
| 16. Barnyard, drained. | 42. Dairy apparatus, steam. |
| 17. Cows, healthy. | 43. Dairy apparatus, power. |
| 18. Cows, tuberculin tested. | 44. Dairy apparatus, washing, sterilizing. |
| 19. Cows, sound udders. | 45. Dairy apparatus, cooling, bottling. |
| 20. Cows, body groomed. | 46. Dairy apparatus, pails, cans, bottles. |
| 21. Cows, body washed. | 47. Dairy, ice abundant. |
| 22. Cows, tail washed. | |
| 23. Cows feed, no strong flavor. | |
| 24. Cows feed, none unwholesome. | |
| 25. Milkers, no contagious diseases. | |
| 26. Milkers, hands washed. | |

There are altogether seventy or more of these requirements. It is obvious that the farmer who undertakes to do this sort of thing must be well equipped with money and with brains.

Such a system is entirely out of the reach of the rank and file of farmers producing milk for a big city like New York. Yet I am fully satisfied that clean milk production is well within the reach of any dairy farmer provided that there is a division of labor made, and that he does properly the small part which is assigned to him. This division of labor takes place between the farmer on the one hand and such a central station as I have suggested on the other. What this division is I show in the tabulation below:

WHAT FARMER DOES

- | | |
|---------------------------------|------------------------------------|
| 1. Cows, healthy. | 5. Cow feed, no strong flavor. |
| 2. Cows, tuberculin tested. | 6. Cow feed, none unwholesome. |
| 3. Cows, sound udders. | 7. Milkers, no contagious disease. |
| 4. Cows, not in calving period. | |

WHAT STATION DOES

- | | |
|---|---|
| 1. Water supply, pure. | 10. Dairy-house, apparatus, power. |
| 2. Dairy-house, superintendent. | 11. Dairy-house, apparatus, washing, sterilizing. |
| 3. Dairy-house, employees. | 12. Dairy-house, apparatus, cooling, bottling. |
| 4. Dairy-house, white uniforms. | 13. Dairy-house, apparatus, pails, cans, bottles. |
| 5. Dairy-house, room for washing. | 14. Dairy-house, ice, supply abundant. |
| 6. Dairy-house, room for sterilizing. | |
| 7. Dairy-house, room for cooling, bottling. | |
| 8. Dairy-house, laboratory. | |
| 9. Dairy-house, apparatus, steam. | |

Those requirements relating to the general health of the cow must always be insisted upon, with the exception of tuberculin testing. Clean milk can be produced from any kind of cows whether tuberculin tested or not. I believe that tuberculin testing is necessary only where milk is to be sold in a raw state.

The cost of producing and handling any commodity depends chiefly on the volume of business. Certain fixed charges are always necessary to provide facilities for the different processes. Where the volume of business is small, these fixed charges inflict a heavy tax on the goods sold. Where the volume of business is large the tax is distributed and each unit of the commodity has to bear only a small part of the tax. In the production of certified milk we see illustrated the effect of the small volume of business causing a heavy tax on each quart of milk sold. In order to per-

form all of the sanitary processes heavy fixed charges are necessary. The total number of quarts produced on each dairy farm is comparatively small and each quart carries with it a heavy tax. If there are ten certified dairies there will be ten artesian wells, ten steam boilers, ten steam sterilizers, ten bottle washing, pail washing and can washing outfits, ten bottle filling machines, ten sets of cooling and refrigerating machines, ten superintendents, and ten forces of dairy employees. All fixed charges are multiplied by ten, and much of the certified milk consequently carries such a heavy tax that it costs 20 cents per quart.

Contrast with this the system of doing business with the division of labor which I have suggested. Centralization is the backbone of success in modern business. By centralizing the major sanitary processes in one dairy house, and by multiplying dairy farms which are contributing milk to the dairy house, all of the overhead charges and the cost of equipment are divided, so that a very small tax is inflicted on each quart of milk.

I am not advocating the admission of cow stables which are so unsanitary that they are unworthy of membership in any clean milk organization. Some standard of excellence, and decent conditions such as can easily be maintained by any self-respecting dairyman, should be required.

Filled with the idea that any dairy farm could make clean milk by this system, I brought this matter to the attention of the New York Milk Committee four years ago. This committee is an organization supported by philanthropic persons, which has as its object the reduction of infant mortality and the improvement of the milk supply of New York City. The committee was so interested in the statement of my experience that they financed a little milk company to carry out on a larger scale than I had done, the system of milk production which I suggested. This company was called the New York Dairy Demonstration Company and has been doing business for more than two years. At my suggestion an abandoned milk shipping station was purchased in the town of Homer, N. Y.,—it was completely equipped with all of the apparatus necessary for a first-class dairy house. Farmers in the neighborhood were invited to become patrons of

this station. Twelve dairymen attended the first meeting, at which I told them that one of the requirements would be the tuberculin testing of dairy cattle. At this announcement nine of the gentlemen left the meeting and three remained for further discussion.

The second requirement I mentioned was the use of covered milking pails to be washed and sterilized at the central station, and the cooling of night's milk with ice. This was agreed to and business was commenced more than two years ago. For the first three months, to my astonishment, the laboratory tests made in the city failed to show any improvement in the quality of the milk. I sent a bacteriologist to the station at Homer with laboratory equipment and instructions to test the milk of each farmer as it was brought in in the morning, and to offer one-quarter cent a quart to each man who furnished milk below 10,000 bacteria per cubic centimeter. On the day that this was done the tests of the milk suddenly dropped from several hundred thousand bacteria to less than 10,000. This was sufficient to convince me that the testing of the milk by the laboratory in the station and the payment to the farmer of a premium for his efforts at cleanliness were necessary to stimulate him in carrying out the sanitary measures required.

The number of farmers rapidly increased from three in February, 1911, to twenty-nine in the month of June, and to seventy-one by the following October. The volume of milk increased from 600 quarts to over 14,000 quarts per day during the flush season. The station is still in operation. Each dairy farmer as he drives up to the station with his load of milk, after discharging it at the receiving door, drives on to another door where he is furnished with a complete outfit of clean sterilized milk cans and covered milking pails, sufficient for both morning's and night's milk. Cans and pails are both fitted with tight tin covers to protect them from dust during transportation. Samples are taken from a can of both morning's and night's milk of each dairy farmer by the laboratory assistant at the station, so that he may test them both for butter fat and for bacteria. The milk is poured into two large receiving vats, one for milk from herds which are tuberculin

tested and the other for milk from herds which are not tuberculin tested; the former is the only milk which is shipped out in the raw state, all of the latter is thoroughly pasteurized at the station. The station is completely equipped with the most modern apparatus for pasteurizing, cooling, bottling and shipping milk, and also has a complete equipment for washing and sterilizing the milk bottles, washing, sterilizing and drying milk cans and washing, sterilizing and drying milking pails. One of the rooms is set aside for a laboratory and equipped with apparatus for testing milk for butter fat and for bacteria.

The bacteria test is considered to be the most important work carried out at the station laboratory. Bacteria and dirt are such close companions that it is well recognized that one is rarely, if ever, present without the other. The numbers of bacteria in milk indicate cleanliness in the opinion of the leading milk experts. They also show whether milk is old and whether it has been properly refrigerated. The morning's milk and the night's milk of each dairy farmer are tested for the numbers of bacteria present. The results of these tests are posted on a large bulletin board which hangs on the outside of the building, so that each dairy farmer may read the results of the tests of his own milk as well as the results of the milk of all the others. Their interest in this bulletin board is not mere curiosity, but is stimulated by the fact that the size of their monthly check for milk depends upon the results of the laboratory test. The man having a small number of bacteria in his milk receives more money than the man having large numbers of bacteria.

The use of the small-mouthed milking pails contributes more, perhaps, than any other one thing to the reduction of bacteria and the cleanliness of the milk. Pails having a mouth five inches in diameter and made all in one piece are used. There are no strainers in these pails, but the mouth is so tilted that the opening is almost vertical when milking is performed. Objections which were raised during the first few weeks by the dairy farmers and their hired help against the use of these pails have now entirely disappeared, due to the fact that only a little practice is necessary to milk easily through such a small opening.

A number of other investigators have had some experience with

the small-mouthed milking pails, and their tests of milk obtained by the old-fashioned open milking pail and by the use of the covered pail have shown reduction in the numbers of bacteria ranging all the way from 70 to 95 per cent. by the use of covered pails alone, without any other improvement in their methods of milk production.

The dairy farmers themselves are required to have only a milk house with a tank of water for cooling milk. In this tank the 40-quart cans are placed and are surrounded with cakes of ice which float in the water. This milk house contains nothing but the 40-quart cans, the covered milking pails and the tank of water. Beyond this, the dairy farmers have no milk equipment. There are no rules regarding the care of cows, or the care of cow stables, or the care of employees. The dairymen have learned that when they exercise special care in these matters their monthly check in payment for their milk is larger. This has led to the general practice of brushing and washing the cows, and keeping the stables reasonably clean, and in the case of men who are leaders, it has led to the washing of hands and the wiping of the udders of the dairy cows before milking. Below is a copy of the monthly bill made out to one of the dairymen for milk delivered during the month of November, 1912:

New York Dairy Demonstration Co., Homer, N. Y.

1912	To Mr. Blank, Dr.	
Dec. 1.	To 4,500 qts. of milk at $4\frac{1}{4}\text{¢}$	\$191 25
	To premium butter fat 3.9% at 2¢	9 00
	To tuberculin test at $\frac{3}{4}\text{¢}$	16 87
	To bacteria at $\frac{1}{4}\text{¢}$	11 25
Total		<u>\$228 37</u>

In this bill it is seen that if this dairyman had sold his milk to a shipping station buying regular market milk for New York, he would have received \$191.25; but this bill shows that certain premiums are received by the dairyman of Homer, because he carries his milk to the Homer station. The fact that his cows were tuberculin tested increased his check \$16.87; the fact that his milk contained a bacteria count averaging less than 10,000 for the month brought him in \$11.25. He also received a pre-

mium for richness, because his butter fat was above 3.7 per cent., which is the standard set by this station.

Now as to the results of the practice of this system of milk production at Homer. Many thousands of tests for bacteria have been made at this plant. During the first year and a half the work was done by a graduate of the Massachusetts Institute of Technology, who while acting as bacteriologist to the station was also superintendent of the plant. During the last three months the work has been done by a young man recently graduated from the local high school, who was trained under the former bacteriologist to carry on this work. The ordinary shipping station could hardly afford to pay the salary of a high-class bacteriologist. The counting of milk by the plate method for bacteria is, however, not a complicated or mysterious process, but something which can be mastered by any young man with a high school education. A training of only a few weeks is necessary to instruct such a man in the methods sufficient to enable him to make tests which can be relied upon. This makes it possible for any shipping station having a reasonable volume of business to afford this kind of tests. Tests of the milk from each dairy farm at Homer have been made by the bacteriologist of the Department of Health of the City of New York, who sent representatives to the station to take their own samples and made the analyses in New York City. Tests have also been made on several occasions by bacteriologists who have visited the plant and have remained there for the several days necessary to carry out the tests in the laboratory at the station. All of these tests have united to show that the farmers are bringing milk to the station which contains numbers of bacteria much smaller than can be found in milk brought to shipping stations where such a system as this is not practiced. The company has been informed that among 1,000 or more stations shipping milk to New York City this is the only station whose milk is all in Class A. Its greatest market has been the 55 stores operated by the New York City Department of Health for the feeding of infants. During the past summer all of the milk supplied to these stores came from the Homer station, and during the hot months as many as 14,000

babies per day were fed on this milk. Results show that the death rate among infants in Greater New York was considerably lower during 1912 than in any previous year in the history of the city.

Below is a statement showing the score of 24 of the dairies made by representatives of the United States Department of Agriculture, using the United States score card, and the bacteria count averaged for the month of August, 1911, for these same farms:

U. S. score, total	Farm No.	Bacteria count
1	70.55	4,000
2	64.00	2,800
3	72.60	4,000
4	80.55	3,400
5	67.55	2,300
6	77.75	2,300
7	80.55	2,000
8	74.15	4,800
9	69.80	2,400
10	79.20	2,800
11	79.80	1,500
12	66.05	6,600
13	76.35	2,500
14	81.45	3,000
15	64.55	21,000
16	81.85	2,200
17	74.40	3,400
18	80.35	2,200
19	73.60	2,800
20	73.60	3,000
21	71.05	3,600
22	75.95	2,400
23	59.00	2,200
24	78.05	3,600

From this tabulation it is interesting to note that the farms scoring the highest did not necessarily have the smallest numbers of bacteria in their milk.

As another item of interest I append below a table showing the results of the milk competition of the New York State Fair at Syracuse, N. Y., in September, 1912:

No.	Name	Milk	Score
1.	H. Corwith	C	96.5
2.	Andrews Bros.	M	95.25
3.	Perry Bros.	M	95
4.	N. Hitchcock	M	94.75
5.	Tully Farms	C	94.5
6.	W. Hatch	C	94.25
7.	S. Crane	C	94
8.	D. Warner	M	93.8
9.	Borden's	C	93.75
10.	Ulsterdorf	C	93.5
11.	J. Hathway	M	93
12.	N. Y. Dr'y Dem. Co.	M	93
13.	Lime Ridge	M	93
14.	W. Muller	M	92.5
15.	Brighton Place	M	92.25
16.	O. Whitehouse	C	92
17.	Markham & Puffer	C	91.75
18.	H. E. Dana	C	92.5
19.	W. Wilmarth	C	90.75
20.	A. Meeker	C	90.5
21.	Seven Gates Farm	C	88.5
22.	A. Atherton	M	88
23.	H. C. Crofoot	M	87.5
24.	E. Hawkins	M	86
25.	F. Vogelsang	M	84.5
26.	W. Shineman	M	84.5
27.	Broome Co. Dairy	M	83.25
28.	Borden's	C	83
29.	Middlebrook	C	82
30.	L. Klock	M	81.5
31.	W. Chase	M	79
32.	H. C. Mather	M	78
33.	City Dairy Co.	C	76.5
34.	J. W. Luck	M	75.8
35.	W. B. Simons	M	75.5
36.	Dunham Bros.	M	74.5
37.	G. Bilner	M	73
38.	Borden's.....	C	66
39.	McNamara & Hickey	M	62.75

This list includes sixteen certified dairy farms and 23 ordinary dairy farms. Scores number 3, 4, 11, 12, 14, 23 and 30 were for milks shipped from Homer, produced by the Homer farmers. Out of the first four places two were taken by Homer farmers, and five out of the first fourteen. The milk was judged by a

special committee appointed for the purpose who had no interest in any of the milks competing.

The principles involved in my system of producing and handling milk, while they have been practiced on a large scale at Homer, New York, for the first time, have also been practiced at Princeton, N. J., for the milk supply of the university with the same degree of success. They are also being adopted in a number of other places. I summarize these principles again as follows:

ESSENTIALS OF CLEAN MILK PRODUCTION

1. Small-mouthed covered milking pails.
2. Cooling milk with ice-water.
3. Sterilizing utensils at central station.
4. Bacteriological tests of milk at central station.
5. Payment for milk based on bacteriological test.

I am satisfied that the conscientious practice of these five principles will result in the production of clean milk, and that this system places within the reach of any group of milk producers a degree of cleanliness for their milk which will make the same satisfactory in that respect, and that the price paid to the farmer need be not more than one-quarter cent per quart. In short the market value of cleanliness, which is the subject of this paper, so far as the farmer is concerned can be made one-quarter cent per quart by the practice of the system of milk production described. There will be an extra cost at the central station of one-quarter cent per quart for the work of washing, sterilizing utensils and laboratory testing, providing the volume of business is sufficiently large.

There will also be an extra cost of retail delivery since any advance in price scatters the trade. But such cleanliness as I have described need not advance the retail price of milk more than one cent per quart. By centralizing and organizing the sanitary work, the consumer can get four or five cents' worth of cleanliness for one cent.

PRESIDENT DOLLAR: I am sure that this excellent talk by Dr. North has been of benefit to every person in the room, whether consumer or producer.

FIFTH SESSION

THURSDAY, 10 A. M., DECEMBER 12

Mr. Elwood.—You will please come to order for the business meeting of the New York State Dairymen's Association. The president seemed to think it needed a real veteran to preside at the deliberations which are about to take place, and I have great pleasure in introducing, although it is unnecessary, Mr. George A. Smith.

CHAIRMAN SMITH: The first business this morning, as announced by the president, will be the reports of committees. As chairman of the auditing committee, I submit the following tentative report:

At the beginning of the work for arranging for this meeting	
Mr. Kirkland, the treasurer, had.....	\$726.90
Paid to Mr. Griffith, secretary, for work in arranging for the meeting	525.00
	<hr/>
Leaving balance in Mr. Kirkland's hands.....	\$201.90
Received for space from the Syracuse people who were to help, and from incidentals.....	1,600.50
	<hr/>
Making	\$1,802.40
Paid out for arranging meeting and incidentals, postage, etc....	714.23
	<hr/>
Leaving in the treasurer's hands.....	\$1,088.17
Receipts from tickets, etc.....	628.25
	<hr/>
	\$1,716.42
	<hr/> <hr/>

The bills to be paid for the armory, etc., leave an apparent balance of \$192.42.

Motion made and carried that the report of the committee be accepted and placed on file.

The nominating committee recommended the following as officers for the coming year: President, E. H. Dollar, Heuvelton; vice-president, H. C. Elwood, Buffalo; secretary, W. E. Griffith, Madrid; assistant secretary, Harry E. Jones, Syracuse; treasurer, R. R. Kirkland, Philadelphia; directors, Calvin J. Huson, Penn Yan; F. N. Godfrey, Olean; Frank C. Soule, Syracuse; W. N. Giles, Skaneateles; H. C. Lange, New York; W. A. Stocking, Ithaca.

Motion made, seconded and carried that the report of the com-

mittee be accepted, and the above were declared elected officers for 1913.

CHAIRMAN SMITH: A good many years ago I was helping to do farmers' institute work and one of the men sent to help me was Mr. Lillie. He traveled with me during the winter and we visited a considerable part of the state and I had a very pleasant acquaintance with him. I know that he did some good work and I am very sure that with his added experience since that time in the cow testing association and other work in Michigan, where he has done wonders in building up the dairy work, he can give us some thoughts this morning that will be helpful in our work here. It gives me great pleasure to introduce to you Mr. Colon C. Lillie, of Cooperville, Michigan.

DAIRY FARMING

COLON C. LILLIE, COOPERVILLE, MICHIGAN.

I presume that you have already criticised my subject as being too broad. Dairy farming is certainly a broad subject, and I want to assure you at the beginning that I shall not attempt to go over the entire subject of dairy farming, but simply pick out some particular phases of it for discussion with perhaps some emphasis my way of personal experience. I want to say also, in reference to the remarks of the chairman, that I think it was in 1900 I accepted an invitation to come to this state for three weeks' institute work, and it was my good fortune to fall into the hands of Mr. Smith, and I assure you that the acquaintance which I formed with him at that time has been of great benefit to me ever since. I do not believe any man, especially any young man, can travel three weeks with Mr. Smith without having it do him such good that it will last him his entire life.

I want to say also by way of preface that my talk this morning upon dairy farming is based almost entirely upon my own experience. I have owned and operated a dairy farm nearly since I attained my majority. Ever since I finished my agricultural education at the Michigan Agricultural College I have had the actual management of the same dairy farm. I have not made as great a success of it as some, because of my shortcomings, because of my environment, because of the lack of necessary capital and

that sort of thing; but I have studied the problem and have tried to make my farm practical.

I do not interpret dairy farming to mean such intensive dairying that nothing else is produced on the farm. My experience and observation is that it is a good thing on the dairy farm to have some cash crop, something to do, if you please, between milkings, that makes it more of a varied business, and not confine oneself exclusively to dairying. Now dairy farming, my friends, is a business pure and simple. You cannot make a success of dairy farming any more than you can of any other business unless you put business principles back of it. You have got to have a business man on the dairy farm if he makes a success of it, just the same as in a factory. If you tell me that Mr. A has made a greater success of any kind of business than Mr. B, I am warranted in saying that A had greater executive ability, that he understood business principles and applied them more successfully. I can stand here, and Mr. Smith also, until doomsday and tell you what you ought to do to make a success of dairy farming, but unless you are business men enough to put it in practice in a business and practical way you will make a failure. It is not always the best educated man that makes the greatest success of dairying — far from it. The college professor may make a signal failure of it and yet know all about the subject. Why? Because he lacks business or executive ability. We must not ignore that. It is the man back of every enterprise that makes that enterprise a business success, and it is just as true of dairy farming as any other kind of business in the world. I believe that dairy farming, the business of growing crops upon our farms and marketing those crops through the dairy cows as dairy products, is one of the most profitable branches of agriculture in this country to-day. I do not believe there is any phase of agriculture, if you take everything into consideration, where there is greater chance for profit, real profit, than where a man grows crops on his farm for his cows, makes butter or sells cream, feeds the skimmed milk to calves and pigs, retains all the fertility possible upon his own farm, and thus markets his crops through his cows.

The first thing, of course, to consider is the raising of crops for the cows. That is the first business of the dairy farmer. It is

quite an important question what crops we shall raise. I do not want to infringe upon Professor Van Pelt's talk this afternoon on feeding the dairy cow, but I must give you my idea about it. The dairy farmer ought to raise alfalfa or clover, or some legume, and corn silage. Every dairy cow on a farm in New York or Michigan ought to have all the good corn silage and all the clover hay she will eat up clean every day she is kept in the stable. Why? Because we can produce more food per acre with corn than any other plant, and because it is easily produced in a succulent form. Again we cannot farm successfully unless we grow clover or alfalfa. I am not prepared to say here this morning how large an area of alfalfa you should grow. I am not prepared to say that you should substitute alfalfa entirely for clover. I am not prepared to say that you should go as far as that. I do not know. I am trying to work out that problem myself, whether I can give up this wonderful plant, red clover, entirely and grow nothing but alfalfa. But I am prepared to say that we should grow some alfalfa on every dairy farm. I do not believe there is any soil in New York or Michigan that will not produce alfalfa successfully if started. We should have this legume. We cannot hope to keep up the fertility of our farms, the mechanical condition of our soils, to grow profitable crops for any considerable length of time unless we grow either clover or alfalfa. There is not any question about that from the practical standpoint. If we do not know how to grow them, the first thing we should do is to learn how. We must have them if we want to make farming a permanent success. That is the foundation. They are good feeds for the dairy cow, rich in protein. Red clover is just about a balanced ration, one pound of protein to six pounds of carbohydrates. If it was not so bulky it would not be necessary to raise anything else to make a balanced ration for the dairy cow. But we want to raise corn also. We must make a success of raising corn. There may be places where it is impossible to make a success of raising corn for market, but I believe there is no place in this country where we cannot make a success of raising ensilage corn. We can raise more cow feed per acre in Indian corn than any other known plant. We can save it in the silo and preserve its succulency and feed it to the dairy cow

through the cold winter, and it must have a wonderful effect in stimulating the flow of milk. We pin our faith upon clover, alfalfa, and corn silage, but to get the most out of the dairy cows with capacity we must have something besides these bulky feeds, a concentrated ration. It should be richer in protein than corn silage because it is to supplement the wide ration of 1 to 12 in corn silage. We can raise it on our own farms if we want to, probably by growing soy beans but surely by growing Canada field peas. Mix the peas with oats; the oat plant will hold up the pea vine so that you can harvest in the modern way with a binder. Do not make hay out of them; ripen and thresh them. Grind the grain and feed it to the dairy cow and you can have upon your own farm a complete balanced ration, balanced so far as food is concerned and so far as the bulky part of the ration is concerned. Of course it rests with the dairy farmer as a business man to find out whether or not he can raise this mixture of concentrated protein cheaper than he can buy it. It is a question to be determined with a lead pencil and a paper pad. If you can buy Buffalo gluten feed or cottonseed meal or distillers' grains or any of the numerous by-products which we have in this country, and get your pound of digestible protein cheaper than you can grow it in the field, it is only a business proposition to do it. But we can raise them on our own farms, and that is what we have farms for; to raise feed for the dairy cows. It is a question that we all ought to consider carefully.

There is another thing. It is necessary on the dairy farm to have bedding as well as feed. I do not see how the dairyman can get along without one crop which is raised primarily to bed the cows, to make them comfortable and keep them clean. Perhaps you will laugh when I say I can afford to raise wheat, and yet I believe that as a dairy farmer I can afford to grow wheat as one crop in the rotation because I want the straw for bedding. My friends, I have had a seven-year average of 30 bushels of wheat to the acre without plowing for the wheat. We put the corn into the silo, cultivate the ground and sow to wheat. I believe that there is profit in growing wheat under that system even in the state of Michigan, and it gives me bedding that I would have to go outside of the farm and pay \$10 or \$12

a ton for. If you raise a large area of peas and oats you can use that straw for bedding. It is, however, almost too valuable for bedding because pea and oat straw, if the peas are harvested just when they should be and properly taken care of, is valuable forage for the young growing stock especially. Pea and oat straw makes a valuable forage and you cannot afford, as a business man, to use it simply for bedding. It ought first to be run through the manger. The young stock ought to have a chance to eat practically all of this as it is rich in protein. We never have been able to raise enough oats and peas to provide sufficient straw for bedding, and we had to put into the rotation a crop of wheat.

The greatest factor upon the dairy farm other than the man himself is the dairy cow. We all realize that the dairy cow is the dairy farmer's machine through which he markets his products, and the better that machine is, the more economical it is, the greater opportunity there is for him to make a profit. We realize that there are a great many dairy cows that have not the capacity to make a profit in manufacturing crops into finished products. We have found out by actual experience that some cows have more capacity to consume feed and turn it into marketable products at a profit than others. That is a question for the business farmer to consider, for him to figure out. He must learn that there is a great difference in these machines and it is up to him as a business man to see that the poor ones are weeded out and only the good ones retained. We hear a great many people, usually editors of agricultural or dairy papers, claim that the farmer does not make any money in dairying. They figure it out that a great many farmers are losing money in dairying, that they do not get sufficient prices for their products, that the feed of their dairy herd costs them so much and the labor so much that there is no profit in it. Now I do not believe the dairy farmers get any better prices or as good prices as they ought to. I do not believe they get their share of the consumer's dollar. I believe that is something for the dairy farmers in a cooperative way to investigate carefully. But on the other hand I do not believe that dairy farming over this great country is a losing business. I do not believe that so many farmers, scattered all over this country, would stick to it if they did not make something out of it. I do not care

whether they keep books or not, they know whether they are making anything or not, and they would abandon dairy farming if they did not make something out of it. I can conceive that a man as a dairy farmer can make a profit on his farm even though all of his cows do not pay for the feed they consume and that it would be better business for the farmer to market products through the dairy cow if she did not give him a cent of profit on the market value of the feed. It is better to feed the dairy cow at market prices than to grow those crops and haul them away from the farm and sell in the open market at the same price. I make the dairy cow the market for the crops I grow. If she will pay me market prices for those feeds — hay, silage, peas and oats — as much as I can get for them if I haul them away from the farm, is it not better for me as a dairy farmer and business man to sell these feeds to the dairy cow than to haul them off and sell them in the market? No question about it. But it is not necessary for us to feed the crops to cows that only barely pay market prices for them. On an average the dairy cows of this country pay more than the market price for their feed. In Michigan in 1907 we had four cooperative cow testing associations in different parts of the state. These associations averaged a little over three hundred cows to the association, or over twelve hundred cows under test. The cows were charged up with every bit of feed consumed at market prices and given credit for butter fat at market prices — not fancy prices but just average Elgin prices — and on the average those 1,200 cows paid the farmers \$1.85 for every dollar's worth of feed consumed. It is better for the dairy farmer to feed his crops to the dairy cow and get \$1.85 than to ship to New York and get \$1. A great many cows among those 1,200 did not pay market price, but others paid more. I know you can select herds in New York and I can in Michigan that pay the farmer much more than that for feed, but this is an average. I know, too, that you can probably find herds in New York, and I know we can in Michigan, where they would not pay anywhere near as much as that. I presume these 1,200 cows were owned by men who were above the average of dairymen, or they would not have had enterprise enough to be members of a cooperative cow testing association.

Now the question is how to get those cows. I believe the only practical way, friends, is to breed them yourselves. I do not believe you will make a success in trying to purchase them, except possibly to get the first start. I believe the farmer must raise them himself. It is largely a question of breeding. I think right here is where the dairy farmer has fallen down badly. He has not been a good breeder of cattle. As a matter of fact you can count on one hand almost the men's names in the history of the improvement of breeds of live stock, those that have actually improved our domestic animals. Not everyone can do it; not everyone has the faculty or insight to take a breed of animals and by handling them himself improve the breed. Great breeders are as scarce as great statesmen. One reason why the dairy farmer has not made a success of improving his dairy cattle by breeding is because he has not had a fixed ideal, because he has been trying to breed for too many points, if you please. The trotting horse men in this country have set the example for the dairyman that he should appreciate. You know they do not care whether a trotting horse has a Roman nose or not, they do not care if he is a little ewe-necked, whether his hind legs are models, whether roan, bay, or black — if he can only trot, if he can only get in under the wire a little sooner than his neighbors. And yet we dairymen throw out perhaps the best heifer calf in the herd because her horns are not just exactly right, or her tail not long enough, or not enough spots or too many spots, or something of that sort. We are losing sight of the essential thing in the dairy cow in trying to get something that pleases our eye by her external appearance. If there is any lesson that the cooperative testing associations bring home to the dairy farmer it is this question of utility; it should be the dominant thing for the dairy farmer to breed for. What do I care what the color of a dairy cow is if she will take the feed I grow and give me \$2 for it when I could only get \$1 if I sold it off the farm? What do I care whether or not her horns project exactly as I think they should? I tell you we want to stick to the old adage that handsome is that handsome does, in the dairy cow. The good horseman will tell you that he never saw a good horse under a poor color. This is the idea that we want to bring out in breeding the dairy cow.

We want to breed for utility, for animals that can do things; not animals that shine in the show-ring.

The cooperative cow testing association places dairying on a business basis. You charge every cow with the feed consumed and you give her credit for her dairy products, and at the end of every year you balance the ledger. If she makes a profit she is worthy to be kept in your herd; if not she is unworthy. That is the way the successful trotting horse man does. We know the wonderful improvement of trotting horses in this country. We know their development, and they have been bred for the one purpose — speed. We want to breed cows for one purpose — economical production. The cow that can take the feed which we produce upon our farms and turn it into milk and butter, and make the greatest profit, is the best cow, and I do not care whether she is marked according to the scale of points for that particular breed or not, or what breed she belongs to. The cow that will make the best profit, like the horse that can win the race, is the one for us to select for future breeding purposes. It is utility, not looks, that count — I was going to say it is not ancestors we want, and yet we cannot go back of them. We know that ancestors count and we should select animals whose ancestors have been productive cows and have excelled, because we know that we are more likely to get heifers out of such animals that will make a profit. And we discard others entirely and only breed from those; and yet we must have a right examination of each individual, we must keep a record of each individual and select only those which are of the greatest value to us in a business way, as the dams of the future members of our herds.

The dairy sire is half the herd; he may be more. We have made a great mistake in the selection of dairy sires and their use. Many of us for years have tested the dairy cows through the pail, the practical test, but we have not tested the sires. We have purchased them entirely upon their breed, pedigree, and individuality, and have not put them through the breeding test. No man ought to breed his herd to a young sire simply because he is an extremely well-bred animal, or because he is almost perfect as an individual and backed up by breeding. Those are valuable qualities, but they are not the most valuable qualities. The question

is, what will that sire do when he is mated to the cows in our herds. That is the chief question, the utility test. You do not know the value of a sire until he is four or five years old and his daughters freshen, and yet the average dairy farmer breeds to a sire only a year old, and perhaps does not keep him longer because he does not want to take care of an older animal. And so he is breeding to sires of unknown quality all the while. It may be that he is sired by a bull that has had wonderful prepotency, it may be that he is out of a cow that has produced phenomenal records, and yet I say to you that in my observation that calf may not be worthy to head your herd,—and you do not know until you have tried him out. Here is where cooperative breeding counts. Here is where the cow testing association idea comes in to help the average dairy farmer. It is only the farmer with a large enough herd to test the young sire that can make very much advance along this line, working alone. If you have a large herd of cows you can afford to select the sire to replace the one you have to discard, and rear him and only breed him to a few cows at first until those heifers have developed and you know just what effect he is going to have upon your herd. Yet we can work together in a cooperative way, as the farmers of Denmark do, and own sires jointly. Then an association can buy a young sire, using good judgment in selecting the one with the best individuality and breeding, and breed him to one or two of each herd only, wait until we see the results, then if he proves to be valuable we have drawn a prize, and if not we have simply drawn a blank and the only thing to do is to make bologna sausage of him. It is a slower process, but my friends it is the only safe one. You ought to put the sire to the test, and from the same practical standpoint that you test the cow, and you can do that only by using him sparingly, not breeding him indiscriminately to all the cows in your herd, because you may undo what it has taken you years to build up. You cannot bank entirely upon the ancestry or individuality. His prepotency can only be shown by actual test. My observation and experience is that if we as farmers would be careful along this line, if we would find out the real worth of the sires, and then breed only to cows which are profitable, we would make a marked improvement in the utility of our dairy

cows. That has got to come before we make any great progress in improving the average dairy cow of this country.

Hogs and poultry belong on the dairy farm. They fill in between milkings. You can get more out of your labor if you have hogs and poultry than if you have only cows. Good hogs and good poultry should be combined with the dairy cow, and they both bring good prices. You want these to feed the by-product, skimmed milk, to if you sell the cream or make butter. The experiment station values skimmed milk at 20 to 25 cents or more per hundred pounds for feeding to common pigs and common calves for a common market. If you feed the skimmed milk on the farm to stock which will bring an extra price, it is evidently worth more. The more valuable your pigs and your calves, the more valuable it is to you. I would not want to sell the skimmed milk on any farm for \$1 a hundred. I can make more by selling the butterfat at the market price and feeding the skimmed milk to dairy calves and bacon pigs. These are some indirect benefits from dairy farming that ought to be taken into consideration, but the average dairy farmer does not. He is simply looking for the cash returns, the quick returns.

There is no question but what we can keep up the fertility of the soil a great deal easier with animal husbandry than without it, although with commercial fertilizers we can keep up the fertility without live stock. It can be done and will be done in the future more than it is now. But we can keep it up easier and better with live stock husbandry than we can without it. It is a more simple proposition. If you get on the train and ride from here to Michigan or through Wisconsin or the Great Northwest, you do not have to ask when you come to dairy communities. You can tell it by the crops and the looks of the buildings. It is largely because they keep their land in better mechanical condition, because they keep the carbon on the farm and plow it down. When you get into a grain section where their policy is to grow crops and sell from the farm to feed the world they rob the soil of vegetable matter, get land in a poor mechanical condition, and after a while they cannot grow profitable crops. When you incorporate a certain amount of vegetable matter you keep up the producing power largely because you have kept up the physical condition.

Another thing we do not take into account. If we try to farm without stock and sell all of the crops, every now and then we will have crops that have not the largest market value. In parts of Michigan this year we had in July nearly twelve inches of rainfall just when harvesting clover hay, wheat, etc. You know what that means. You know that a large part of our clover hay was damaged and if we wanted to sell it we could not. Its feeding value is a great deal larger than the market price would be. We are charging that to the cows at just as much as we would if it had not got wet. So many times we find these conditions on the farms. By having dairy cattle on the farm they will take these products even though they have been injured a little by bad weather, and give you a ready cash market for them and a profit in growing them.

I am not going to dwell this morning upon the care of the dairy cow. That has been talked about a great deal. It is a simple matter. All you want to do is to make her comfortable. If the dairy cow is not happy she will not respond to the feed and bring in the returns you ought to have. All you have to do is to make her happy and comfortable, keep her in a dry, well-lighted, well-ventilated, warm barn, feed her properly, and milk regularly, and she is happy. She does not care whether the barn costs hundreds or thousands of dollars, if you will only provide these conditions. If you have made money so that you can afford to build a nicer home than your neighbor, I admire that spirit. I like to see the great barns and the nice houses on the farms and I think we all ought to have them. But I do not think we ought to do that until we make the money to do it with. We know we can get just as good results without the large investment as with it. I would rather put the money into a nicer home than to put it in a bank. I believe that it would be a better investment for the future of agriculture.

I want to call your attention to just one thing more, and that is the question of tuberculosis. Tuberculosis is simply a barn disease. If you have it in your herd and allow it to stay there you are entirely to blame for it yourself, and nobody else. I want to say to you that it is only a question of a little time before the people in the city of New York, in every great city, are going to

refuse to receive dairy products from cows that are infected with tuberculosis. We have either got to guarantee that those products have been pasteurized or guarantee to the consuming public that our herds are free from this disease. I do not know just when that time will come, but it is coming. Public sentiment is growing. The health officers of Chicago succeeded in getting through such an ordinance, but public sentiment was not quite strong enough to allow them to carry it into effect absolutely. We know every great reform of this kind has its setbacks, but it comes up again. It will be only a few years before there will be public sentiment in Chicago to back up Dr. Evans in this respect; and you will have to guarantee that dairy products come from cows that do not have this dread disease. Therefore the farmer might just as well prepare for it. It is a barn disease; it is a question of ventilation and a question of light in the stable. Someone asked me if Jerseys are not more susceptible to the disease than other breeds. They forget that in the Island of Jersey tuberculosis is unknown, they do not have it. When these animals are taken away from their island where ventilation is not a problem for consideration and the Dane, for instance, takes them up to his stone barn, improperly ventilated, in a few years they contract tuberculosis. If you put any breed under improper conditions they will contract the disease. If we will put our barns in proper shape we can eradicate tuberculosis if we already have it. It is needless for veterinarians and health boards to say that we ought to have a law passed compelling every dairyman to sell every animal that reacts, until you first go down and clean up the barn, because if you put the cows back in the same quarters you will always have tuberculosis. On the other hand, if the farmer will put in the King system of ventilation with more light, in a few years he will have no tuberculosis.

If our cows have tuberculosis it is our fault, because we can put in plenty of windows and ventilate the stable so that they will have pure air to breathe and plenty of sunshine, and so eradicate the disease in our own herds without the aid of a veterinarian. Experiments have been made at Champaign, Ill., where they took cows affected with tuberculosis and put them between other cows in a well-lighted and ventilated stable. They not only did not

communicate the disease, but at the end of a certain time they failed to react to the tuberculin test. On the other hand, they took well, sound cows and put them into a poorly lighted and ventilated stable and they contracted the disease. That is good evidence that it is a barn disease.

One more thing I came near forgetting—you can call it sentiment or what you will, but you have got to have a little bit of this if you make a success of dairying. The dairy cow has got to like you. I do not know that it is absolutely necessary that you like the cow, but you must make her like you or she will not give you the best results. I want to tell you just a little experience. A number of years ago I had an old soldier as herdsman—Old Jake, we called him. Most people would say he was a simple-minded fellow, but we knew that he was one of nature's own noblemen. He liked cows and he made them comfortable. He would not think of going to bed at night until he looked them all over to see that they were comfortable. He had it on his mind; not for the money he got but because he liked the cows. I never had my herd do so well as then. There came a time when Jake got a pension and he thought his rheumatism was worse than ever and he had to leave. He was gone about a year, and then he came back, not to see me or the family, but he had stood it just as long as he could to be away from those cows. It was summer time when he came back, and the first thing he wanted to see was the cows. I went down the lane with him and there on the creek flats was the herd feeding. Ordinarily I could go down and they would keep on feeding, but when they saw Jake come along with his peculiar hitch, they stopped and looked, and then they started. When the queen of the herd came up he put his arms around her neck and tears rolled down his cheeks. You want a little bit of that sentiment to make a success with the dairy herd. I thank you for your attention.

CHAIRMAN SMITH: I am very sure that from this practical talk, from the demonstration that he has given you of his practical knowledge of the business, you will want to have a little discussion. But we have another matter that it is necessary to bring up at this time. Two letters have been handed in, one from the Mayor of Rochester and one from the President of the Roch-

ester Chamber of Commerce; and their representative is here and he wants to have a minute's time to talk to you.

Mr. Elwood introduced Mr. Robert Dey, President of the Syracuse Chamber of Commerce; Mr. Thomas Meacham, of the Chamber of Commerce, and Mr. Robert Jones, who spoke briefly, welcoming the convention to Syracuse, extending an invitation to return next year and to make Syracuse the permanent meeting place of the Association, explaining that another year they would be able to provide even better accommodations.

CHAIRMAN SMITH: This subject has been brought up here so that you may know what the feelings are of these different gentlemen. It is something that cannot be settled here and the directors must take it up and act at a future time as may seem best after getting all the information they can.

The following resolutions, prepared by the resolutions committee and presented by Mr. W. N. Giles, were adopted on motions duly made, seconded and carried:

1. WHEREAS, The National Dairy Union has prepared and had introduced in Congress a bill, known as the Haugen bill, and

WHEREAS, Said bill seems to protect the manufacturer of legitimate dairy butter as well as the manufacturer of oleomargarine, and

WHEREAS, This association is vitally interested in the passage of this bill and the protection of their business from the unscrupulous competition of counterfeit butter, and

WHEREAS, Hon. Geo. L. Flanders, of our state, president of the National Dairy Union, is doing such splendid work,

Resolved, That we pledge to President Flanders and the officers of the National Dairy Union our healthy support, and further

Resolved, That we, the members of this association, pledge ourselves to indite personal letters to our United States Senators and to the members of Congress from our respective districts, expressing our approval of and hope for the passage of said Haugen bill.

2. WHEREAS, The dairy interest is by far the greatest agricultural interest of the State of New York, therefore,

Resolved, That the New York State Dairymen's Association

in annual convention assembled at Syracuse, N. Y., do most respectfully urge Honorable Woodrow Wilson (President-elect) that in his choice for the position of Secretary of Agriculture he look carefully to the necessity of choosing a man whose knowledge and training are such as to give him a thorough knowledge of the necessities of the great interests he is to represent, and special interest and sympathy for this now and to be the greatest agricultural interest of all, not only in the State of New York, but the nation at large.

3. *Resolved*, That the New York State Dairymen's Association heartily endorse the administration of Commissioner of Agriculture Calvin J. Huson, and especially commend and approve his advanced position upon the control of bovine tuberculosis as outlined in his address before this association.

4. WHEREAS, The New York State Dairymen's Association has among its objects the improvement of the sanitary character of the public milk supply and the elimination of bovine tuberculosis from the dairies of the state, and

WHEREAS, The New York Milk Committee has under consideration a legislative program to obtain a more adequate state control of the sanitary character of the public milk supply and of bovine tuberculosis, and

WHEREAS, The New York Milk Committee has expressed a desire for the advice and counsel of this association in these matters,

Be it Resolved, That the New York State Dairymen's Association in annual convention assembled, authorize its president to appoint two or more of its members to confer and advise with the New York Milk Committee for formulating and promulgating its legislative program.

5. WHEREAS, The present law on regulation of dairy barns as to sanitary conditions, etc., is inadequate to protect the public health and insure the best results, therefore

Resolved, That we ask that the law be amended so as to give the department of agriculture greater and more efficient jurisdiction.

6. WHEREAS, The present method of selling skimmed cheese is calculated to deceive both dealer and consumer as to amount of fat contained in said cheese, therefore,

Resolved, That we ask that a comprehensive law be enacted regulating the branding and sale of skimmed cheese.

7. WHEREAS, The Agricultural Committee of the House of Representatives has granted a hearing to the dairymen of the country upon the matter of proposed oleomargarine legislation for Tuesday, December 17, 1912,

Resolved, That the New York State Dairymen's Association be represented at said hearing by its president and secretary, or by two delegates chosen by them, and that their expenses for such appearance be paid out of the treasury of this association.

8. *Resolved*, That a vote of appreciation and thanks be tendered by the officers of this association, to the officers of the National Guard, to the Syracuse Chamber of Commerce, to His Honor, Mayor Schoeneck, to the speakers and singers, all of whom have contributed to the success and pleasure of this most interesting convention of the New York State Dairymen's Association.

CHAIRMAN SMITH: We have a little more time that we can take up in discussion of the very valuable talk of Mr. Lillie.

MR. MATTESON: There is one question that Mr. Lillie mentioned two or three times that I would like his opinion on. I agree with you from beginning to end on the matter of barn tuberculosis. What temperature would you recommend for a stable? You say to keep the cows warm. I can sleep in a warm room, but I do not eat very well if they set me by a radiator. What would you call a good, normal temperature for a stable?

MR. LILLIE: Warm air is not necessarily impure air. You can have warm air just as pure as cold air. I do not believe in making yourself or the cows uncomfortable. A stable should not go below 40 degrees; keep it between 40 and 60 degrees.

W. E. DANA, OF AVON: I am a little bit of a heretic, forced to it by disastrous experience. In the first place, I kept a cow barn too warm and the cows had tuberculosis. My barn was warm, but my milk cans showed every variation in temperature. I had the misfortune to have a fire which burned up the old barn; and I built a new one different from the old. I have a great abundance of light in it and I planned that I would have it colder. Last winter the temperature went to freezing. I did not see with the extreme cold any variation in my milk. My cows

carried more hair, more health; and three weeks ago I had the first tuberculin test without a reaction. I believe in air. I have a little boy in my house whose mother, grandmother and uncles died of tuberculosis. I am taking care of him. I go in every night, the window is opened and I put on an extra coverlet; and I am in hopes that with plenty of fresh air and out of door living he will grow up. I believe we can have our barns judiciously handled so that we can keep them colder than we do and have a room ventilated for the cows to be in that will be as comfortable for them as a better-ventilated room would have been for us to have held our session in to-day.

CHAIRMAN SMITH: In 1900 we were so unfortunate as to get tuberculosis in our herd. We put in practice the Bang method and from those animals raised a herd that was sound. We killed the last of the old animals in 1905. Since that time we have not had one single case of tuberculosis, and we have not had it because we keep those cows comfortable; we try to maintain a temperature in that room, which is thoroughly well lighted, of about 45 or 55 degrees; and the King system provides a change of air, and still keeps the temperature high enough so there is no moisture. If you get the temperature too low you will have moisture; and I believe moisture is one of the dangerous things you want to avoid. So long as you can keep the air dry you are all right, but when you get it so cold that the breath of the animals will make moisture, then you are furnishing proper conditions for your animals. Dry, cool air, plenty of light and changing the air often is what means health for your animals; and it means, as Mr. Dana says, that your milk will not change materially, because the animals are healthy, are all right and can stand those changes.

MR. AYRES: Mr. Lillie referred to the King system. In some places it does not work satisfactorily. I was in a barn in Washington county last winter that cost nearly \$5,000; it was equipped with steel stanchions, concrete floor and mangers, the King system, etc. The moisture was excessive. The barn had been in use two months and already mold had appeared. Was that due to faulty construction or location? In some cases I have heard that location such as a hillside is not desirable. And I would like to ask Mr. Lillie also about the use of muslin windows.

MR. LILLIE: If the King system did not work there was something the matter with the construction of it. There are thousands in operation which work perfectly. You may hold your handkerchief near the shaft and there is draft enough to carry it up. Of course the ventilating shaft is nothing more or less than a big chimney. It may not draw for the same reasons that prevent any chimney from drawing. Sometimes it does not extend far enough above the barn, or as you say, a hillside close by and high enough might cause wind currents which would interfere with proper draft. But the principle of the King system is all right and if properly constructed there is no question about its working. I think a muslin curtain is better than nothing, but it is a poor makeshift for proper ventilation.

MR. MATTESON: A neighbor of mine had the same experience with the King system — the dampness and moisture — it simply would not work, and he had a man there who was an expert. But they did not take into account the location of the building. The system is all right. That cannot be disputed for one moment. But sometimes you have got to take into consideration locations that are adverse.

CHAIRMAN SMITH: The King system of ventilation in order to work has to be insulated, the tube has to be insulated, that the warm air will be kept warm. If it is a thin board the air is cooled at once and the circulation stopped; whereas if you make the insulation so perfect that it keeps the air warm, and then put on top of the shaft a shield to prevent the wind from blowing down, and that will turn from the wind all the time, you will have a draft.

Sometimes the cloth system works very well. But we tried it very carefully at the experiment station and found that in a very damp south wind the moisture collected on that cloth and it did not work at all and was a complete failure. As one gentleman said, it is better than nothing but it is not a success at all times.

MR. LILLIE: I do not like to hear the gentleman say there are so many barns where the King system cannot be put in. I do not believe there is a barn in the United States where it will not work. If you have a barn with stone walls like the old-fashioned bank barn, with only one little window, you can still put in this system

by having a box connect on the outside with the pure air intakes. I saw a barn in Illinois with four little chimneys, one in each corner of the stable, and I know it worked because the air carried my handkerchief right up the flue. There is not a barn in the United States where this system cannot be made to work at comparatively small cost.

SIXTH SESSION

THURSDAY, 2 P. M., DECEMBER 12

Meeting called to order by Mr. S. B. Richardson, of Lowville, N. Y.

MR. RICHARDSON: Ladies and Gentlemen: The criticism of the audiences that we have generally had at our annual meetings of this association has been that we did not get people enough in to hear the papers and discussions. I think this convention in this regard is an exception to the rule and I am very much gratified to see the continued large attendance that we have had. It has been continuous from the first session until now, and I have no doubt will continue to the end.

We have with us to-day a gentleman who has had much to do with the dairy interests of the west, and you know we hear very much about what the western people are doing along dairy lines, and we hear very much and feel considerably the competition that they are putting up to us in the old Empire State. We are especially fortunate to-day in having with us Prof. Hugh G. Van Pelt, editor of Kimball's Dairy Farmer, at Waterloo, Iowa. Prof. Van Pelt will now address us upon the "Feeding of Dairy Cows for Great and Economical Milk Production." After his address the meeting will be yours. It gives me great pleasure to introduce Prof. Van Pelt.

FEEDING DAIRY COWS FOR LARGE AND ECONOMICAL PRODUCTION

PROFESSOR HUGH G. VAN PELT, WATERLOO, IOWA

I have been here at your convention meetings for the last two days and have been very greatly impressed not only with the excellent exhibit of dairy equipment and farm machinery that

you have up stairs, and with the exhibit of cattle that you have in the other part of the building for sale, but I have been particularly impressed with the interest that you dairymen and breeders of dairy cattle in New York have shown in the educational meetings that have been held in this hall, and I want to say to you that I believe I would be ungrateful did I not congratulate you upon the attitude you are taking toward these meetings and in the grasping of the opportunity for gaining additional knowledge pertaining to the business in which you are interest. And I would be ungrateful if I did not say to you that you owe much to the officers of this association in making possible a convention such as you are holding here.

In the course of my business throughout the year it is necessary for me to visit dairy conventions from Canada to the Gulf and from coast to coast, and I want to assure you that very seldom indeed have I attended a convention at which there has been so much interest shown and so much given in return in the way of educational value.

I have been asked to speak to you this afternoon on the subject of "Large and Economical Milk and Butter Fat Production," and I believe that it is a subject that at this time in your state, as well as wherever agriculture is pursued, is fitting and proper, because like all other phases of agriculture at the present time the great problem that we must solve is the furnishing of human food at a cost within keeping.

In addressing you it is with appreciation because of the realization that you are dairymen and breeders of dairy cattle who are making the production of milk and butterfat a business rather than a side issue, which is true in so many other localities. You recognize the advantages dairying has over other phases of agriculture. You have learned that the fundamental principle of retaining and building greater fertility of your farms is with the replacing through live stock the fertilizing ingredients of the crops you raise supplemented with those from purchased food stuffs. By adhering to this principle your farms are becoming more productive and, therefore, more valuable year after year.

You are aware that of all animals a good dairy cow provides the most dependable and most profitable market for the grains

and grasses grown upon your farms. Of all farm animals she is the most economical and profitable producer of human food. The evidence of this fact is specifically cited through an experiment carried on many years ago by Laws and Gilbert. It was this experiment which demonstrated that the cow yielding ten quarts of 4-per cent. milk daily was producing as much fat and fat equivalent in seven days as the steer that was gaining fifteen pounds in the same time. In addition to this, the cow's production contained six times as much mineral matter and six times as much nitrogenous material, which are the nutrients that render skim milk so valuable in the growing of young animals. She accomplishes this by consuming the roughage or cheap food largely, with a small amount of concentrates or expensive food, while her brother, the steer, makes his gain largely with concentrates of expensive food and a small amount of roughage.

You have given consideration to the fact that the market for dairy products does not fluctuate in the uncertain manner that markets for other farm products do and, therefore, provides a more certain source of profit without a risk of loss. The feed given a cow to-day is returned to her owner to-morrow and can be marketed at once.

The certainty of dairying has been made impressive to you by the fact that once a month, once a week or every day, if he so chooses, the dairyman may have a check for the work his cows did the month, or week, or day before, insuring permanent and steady prosperity.

You need not be told, for you have learned from experience, that the demand for productive cows has provided you as breeders of dairy cattle a most profitable business, for the farmer in all parts of America as well as other countries is rapidly becoming convinced that there is a vast difference between the profits yielded by a common cow and by a cow whose ancestors have been bred for economical and profitable production for hundreds of years.

Although since 1875 the number of milk cows has doubled, prices for dairy products have steadily advanced and the price of good cows has increased by leaps and bounds. During this period the population of this country has more than doubled, showing that rapid as has been the increase of the number of cows milked they

have not kept abreast of the growing demand. Judging by statistics from reliable sources, the population is to again double during the next thirty-five years, and in order to maintain the present price of dairy products the cow population must also double or their average production be greatly increased. The breeders who furnish the blood for the improvement that is necessary as well as for increasing the number of cows from twenty-two million to forty-four million, are assured of great prosperity in their business during a lifetime.

Those of you who have traveled through districts where grain farming almost solely prevails have no doubt been favorably impressed with the place the cow fills in American agriculture as a home builder. Nothing adds to the dignity of farm life like a good home, and American agriculture, no matter how profitable, will never reach the plane of dignity on which it belongs until the farm home is made attractive enough so that the one farm is owned in one family for generation after generation. This is never the case in grain farming districts where the farmer takes from the soil and markets the fertility with the consideration of immediate gain only. He works his farm during the crop growing season, markets his grain and has little of interest in the farm until another season, and nothing to either render it possible or desirous for him to provide a home on the farm. His one purpose is to accumulate immediate wealth at the expense of future generations, that he may retire and move to town.

The dairy farmer, on the other hand, is kept on the farm and in remunerative business the whole year. The interest and pride that the progressive farmer of to-day takes in building up his herd and his farm leads him to make there a home for himself and his children and his children's children that follow him.

These facts I speak of merely to refresh your minds. They need not be dwelt upon for, unlike farmers in other countries, you have learned through experience the results accruing from association with the cow that daily consumes that which is raised on the farm and twice daily returns to her owner a product of increased value.

In too many instances, however, the producer of milk and butter fat has overlooked the importance of reducing his operations

to a strictly business basis. This is demonstrated by the fact that so often he refuses to apply business principles and even holds them up to scorn as being theoretical, scientific and impractical. He has refused fundamentals which have made millionaires and leaders of men in other lines of industry. The truth of this is evidenced by the fact that of the millions of cows now being milked in the United States only one out of three on the average returns a real profit. Therefore, in dealing with this subject of feeding cows for great and economical results, if I can make impressive the fact that real success depends upon reducing the feeding of cows to a basis governed by the intelligent and thoughtful application of business detail, your time will not have been wasted. As a matter of fact, the farms of the United States are her greatest factories. Every cow is kept there as a machine of certain capacity and efficiency, for the purpose of converting raw materials — the grains and grasses which grow in the fields — into a finished commodity of commerce. The value of each machine should be measured by the amount of feed she can consume and convey profitably into milk and butter fat. To determine this point it is necessary for the dairyman to weigh and test the milk at intervals sufficiently close to determine the relative merits of individuals from the production standpoint, and determining the amount and cost of feed she consumes, he is prepared to say which is the profitable cow and which is the loafer, provided he has given the animals the opportunity for producing their maximum yield. The fact that two-thirds of the cows being milked are unprofitable, does not indicate that these cows are all poor individuals and so poorly bred as to be unable to yield a profit. Proper feeding alone would suffice to make profitable at least half of the cows that are now showing a loss.

There are certain well-known facts pertaining to the feeding of cows that should be adopted and practiced by every dairyman. He should have as clear an understanding of what milk is composed of as the successful manufacturer has of what the article he is making contains. The great secret of manufacturing milk largely and at a profit, is feeding through the most efficient and capacious machine abundantly that raw material from which milk is most economically made. To accomplish this the feeder must

recognize the fact, even though it may appear scientific, that milk is composed of four constituents in addition to water, namely, protein, carbohydrates, fat and mineral matter. There never was a pound of milk made by a cow from anything except food which she had formerly consumed. No cow, great as she may seem, is a mysterious being. She cannot make something out of nothing. It is, therefore, essential to provide her with such food in such quantities, with daily regularity, that her body may be maintained and a sufficient amount of protein, carbohydrates, fat and mineral matter remain that she may have available the raw material necessary to stimulate her greatest production.

It is not my purpose, however, to go into detail relative to the analysis of milk and foodstuffs, nor is it my belief that it would be to your advantage for me to prescribe certain rations to be used upon your herds. Were you to begin at once feeding your herds a ration seemingly perfect, although there might come certain improvements, the results would not be satisfactory. This is due to the fact that cows differ so greatly in individuality and, furthermore, one and the same cow differs so greatly from period to period. In other words, the ration that might be perfect for one cow would be inefficient for another, and the ration perfect for a certain cow would not be conducive to greatest results at another period of lactation.

To attain maximum results it is absolutely necessary to study, care for and feed every cow individually. On first thought this would seem to incur much additional labor, but a trial will prove that very little extra time is required and that the extra effort will result in profits far greater than any work that is now being done. It is not unreasonable to expect that the response on the part of most cows in the herd will be sufficient to almost if not quite double the yield of the herd as a whole, and by following a systematic plan those cows which do not respond are detected, enabling their owner to dispose of them and fill their places with animals more efficient.

Calling to mind the fact that the motherly instincts are those which account for milk-giving properties of the cow and are greatest during the first few weeks after freshening, it becomes evident that greatest production can be attained at that time. To

take advantage of these instincts, she must be conditioned for her work owing to the fact that heavy feeding immediately after parturition is almost certain to ruin the cow.

Preparation of the cow for her work should be commenced four or six weeks before she freshens. She is at that time near the end of a lactation period and should be turned dry if this can be done without injuring her udder. Some cows milk so persistently that this is very difficult, but few indeed are the cases which cannot be made to cease giving milk for ten days by withholding all other feed except timothy hay and dry corn stalks and milking only occasionally and then just enough to relieve the udder. But whether the cow is dry or not, systematic feeding should begin. More knowledge relative to feeding is necessary at this time than any other, for there are three purposes for which feed is given: First, the unborn calf is making its greatest growth and needs much nourishment, which is prepared by the cow from the feed she receives; second, the cow has just finished a campaign of milk giving which has required a great amount of food and has been a tax on her digestive apparatus which should be rested before she starts another year; third, strength and stamina must be stored up in the body to be drawn upon later.

At birth the calf is composed almost entirely of muscular and bony tissue. These parts are built from the protein and mineral matter of the food and assign a reason for feeding the cow well with nitrogenous foods such as oil meal, bran and clover hay. For resting the digestive tract, food cooling in nature and light in character is necessary. Again bran and oil meal fit well, especially when supplemented with green foods, corn, silage, beet pulp or roots. Fat and energy, on the other hand, are stored up by the use of carbonaceous foods and those rich in fats, making corn commendable except that it is heating in nature and should not be fed heavily at any time, especially near the period of parturition when at the best the cow is in a fevered condition. No food is better for the purpose than ground oats and this should be fed liberally even though it may be considered too expensive to feed at other times.

Common-sense reasoning in this matter has established a balanced ration, for in fact, the terms "common-sense ration"

and "balanced ration" are synonymous. The balanced ration is nothing more or less than a ration that will accomplish a purpose more efficiently and more economically than any other ration and differs as the purpose desired changes. Successful feeding depends upon the ability of the feeder to determine accurately the purposes to be accomplished and a knowledge of the physical and chemical properties of available foodstuffs that will enable him to so combine them that an efficient, common-sense, balanced ration results. Thus it is that by analyzing existing conditions, a ration at once suitable to developing an unborn calf and conditioning the cow may be formulated. If it be summer time nothing excels good pasturage or green food as a basic ration, but if in winter, substitutes in the form of corn silage and beet pulp or other succulent food should be used freely in conjunction with some leguminous hay such as clover, alfalfa, sweet clover, cow pea, soy bean or Canada peas and oat hay.

Whether summer or winter conditions exist, a concentrated ration properly balanced should be fed. Four or six weeks is not a long time and quick conditioning necessitates a variety of feeds. As a rule the grain ration consisting of two parts ground oats, one part oil meal, one part bran and one part corn meal, will prove efficient. The amount fed daily depends upon the feeding qualities and condition of the cow. As a rule from six to ten or even sixteen pounds of the mixture may be fed daily to good advantage. It should be borne in mind that feed given during the resting period is far from wasted. Even though the cow returns nothing directly, she is making good use of the food and later will return more profit for feed consumed while she is dry than for that eaten at any other period.

As freshening time approaches, if the feeding has been judiciously performed, the cow will begin rounding into bloom and developing an udder to the fullness of her capacity. It is true that more careful attention will be necessary at freshening than though she were permitted to calve in poorer flesh. Careful and skillful management will suffice to bring her through parturition safely, and every feeder should consider it a part of his education to know how to manage his cows for securing greatest results.

Three days or so before the cow is to freshen, her grain ration should be eliminated and in its stead bran mash, composed of three or four pounds of bran thoroughly moistened and well salted, should be given at regular feeding hours in addition to the roughage which, being of a laxative nature, may be continued.

It is never advisable to permit a valuable cow to calve without attendance. If she is a heavy producer under natural conditions, much greater yields may be expected as a result of special fitting. Furthermore, udder troubles and milk fever are more liable to occur. It is quite generally conceded, however, that if feeding operations are such that the cow's digestive tract is kept in a loose, laxative condition and little if any milk taken from the udder except by the calf for the first forty-eight hours, the danger is reduced to a minimum. The thought of the careful feeder and herdsman, however, is always of the welfare of his charge, so he will watch her closely day and night until the danger of parturient paralysis has passed, so that should the slightest symptoms occur, the air treatment may be put to use and forestall sickness before it has advanced far enough to be weakening in its effect. In case of milk fever, all feeding must cease until the cow is again on her feet and sufficiently recovered to have regained her appetite.

It is well to leave the calf with its mother the first two or three days, for it assists greatly in relieving the inflammation of the udder and keeping the cow quiet. As a rule, when forty-eight hours have passed, if all has gone well the calf should be taken away, for the mother is ready to begin work in earnest. This is in case the udder has reached normal condition. Otherwise, the feeding of soft foods such as bran mashes should continue, and in addition to frequent application of heat, the udder should be milked out thoroughly many times day and night. This represents much labor, but success in any business is attained only by persistent, intelligent effort and close attention to details, and it is he who is most willing and industrious who succeeds and leads others to wonder what secrets he practices.

When the cow's condition warrants that she be placed on solid food, haste must be made slowly for within thirty days she should be on full feed and giving her daily maximum milk yield. Furthermore, she should not be brought to full feed and milk sooner, for at best she is in a weakened condition following parturition.

It is now that the feeder will begin to appreciate the value of the careful and liberal feeding given before freshening, for in all likelihood he has been rewarded with a strong, vigorous calf not predisposed to all the ills that affect calves less fortunately born, and he finds the mother strong, fleshy and ready to work. She has much extra fat stored up in her body and this is well, for, unable to utilize large amounts of food she at once begins drawing upon the reserve nutrients that are stored, and converts them into milk and butter fat. The purpose of the feeder has changed and it is now to encourage by feed and care the transferring of the fat from the body to the pail. Succulent foods and those rich in protein, stimulate milk secretion at the expense of body fat. Therefore, it is well to continue the use of green foods, roots, silage, beet pulp, leguminous hays and in addition a light feeding of such protein feeds as bran, oil meal, ground oats and gluten feed. In the beginning, the daily ration should not exceed four or five pounds and this should be increased slowly and on alternate days. All concentrated feed given and all milk yielded should be weighed. No feeder, no matter how experienced, can get the best out of a cow unless by the use of the scales he knows every day the results he has attained that he may use the knowledge on the morrow. Realizing this to be a fact, many most successful record makers now provide for each cow a box large enough to hold a day's ration and at a convenient time each day her feed for the next twenty-four hours is weighed and placed therein. A little extra work, but results will pay well for it. Developing cows is a business and any business that is worth while is worth doing in an expert manner. By using boxes in this manner, the twenty-four-hour ration can be divided as best suits the demands of the cow. Some cows eat better in the morning, some at noon and some at night. Often it is found best to give a cow one-half of her entire day's ration at night, leaving the other half to be divided between the next two or three feeds, and this can readily be done where the full ration is available.

After the first day's ration has been given, results begin. On the following day the scales will tell the amount of milk stimulated thereby. On the third day, the ration should be increased one-half or three-quarters of a pound, and as a result the fol-

lowing day the scales should indicate an increase in milk flow, in which case a like increase should be made the fifth day. If the scales do not show an increase in the milk, something is wrong. Perhaps the ration is not suited to the particular cow and a change should be made. Thus the ration should be increased by small amounts each alternate day, the scales showing the way on the intervening day. Invariably during the first thirty days a narrow ration — one composed largely of ground oats, oil meal, bran, gluten feed, cottonseed meal, dried distillers' grains, with a very small amount of corn meal, in addition to the roughage — should be used because these are all rich in protein and stimulating to milk secretion.

Greatest results are attained from the feeding that is practiced the four weeks preceding and the four weeks following freshening. If all has gone well the cow has almost reached the limit of her feeding capacity and the limit of her milk-producing ability at the end of thirty days. A perceptible change has been made in her appearance, much of the beefy conformation has disappeared and she has taken on a decided dairy form. The surplus fat has been transformed from the body to the pail.

The problem now is to hold the milk flow and the most ideal working form. Recognizing that some foods tend to create energy and fatten the animal when fed heavily enough, and others furnish milk-making nutrients, and that the cow, whatever else she may be, is a machine kept on the farm to convert these feeds into milk and butter fat, the feeder with the scales and a variety of feeds can so combine and feed them in such amounts as to accomplish any reasonable purpose he may choose, if the machine is efficient. From day to day and from week to week, the ration should be varied gradually, adding to or taking from foods of one character, then another; catering always not only to the demand but also to the likes and dislikes of the individual in charge.

Radical changes in feed or environment should always be avoided, for although variety is necessary, sudden changes, even though for the better, invariably have a tendency to decrease the milk flow. Great annual production is in this manner greatly lessened, for when far advanced in her period of lactation a decrease in milk flow though apparently temporary is very liable

to be permanent and the former milk flow never regained until another freshening period. It is this fact that renders the mistake so great on the part of the farmer of feeding his cows by seasons of the year. It is generally the case that an abundance of food is provided for winter and when the cows leave the pasture in the fall they are well fed and cared for until spring. As summer approaches they are turned to pasture and soon all grain and dry roughage is taken from them. During the early season they thrive and produce largely because of the luxuriance of pasturage. Later the annual drouth of the summer comes, grass becomes short, heat intense and flies troublesome, and as a natural sequence the cow declines in her milk flow. Short feed may continue for only a few days and the owner, looking forward to the coming rains to freshen the pasture, does not concern himself, considering the loss of a few pounds of milk a day for a short period of little consequence. In this manner he deceives himself, for even when a more abundant supply of feed is given the cow she fails to respond with an increase in milk flow, and the final result is that the loss of a few pounds of milk daily continues throughout the remainder of the lactation period, reducing the annual production of the cow from profit to loss.

It is for this reason that from the time the cow freshens until she has finished her year's work she should be fed according to her ability to produce rather than in accordance with custom, season of the year or other conditions. This is possible only in such cases as the dairyman weighs the milk regularly, for there is no other index except the milk sheet that will warn him of a decline in the milk flow.

It is just as easy to change the cow's feed upon the first indication of necessity as to wait until it is too late. Therefore, it is only necessary to search at once for the cause for the decline and eliminate that cause. In this manner and in no other can the feeder know the amount and character of food any particular individual should have at a given time.

By gradually increasing or decreasing the ration, and by adding to or taking from the ration certain foods and noting the results occasioned, by weighing the milk continuously, it is possible to most economically secure the greatest milk flow every day

in the year. Herein too lies the secret of great yearly records and annual profits, for it is not the cow that makes a great daily, weekly or monthly record, but the cow that works well every day in the year assisted by her feeder, that in the end adds perceptibly to the bank account.

Great records are never secured by the dozen, but always by studying and catering to the individual cow.

Anxiety for great records should never tempt overfeeding, though it often does, and many cows are ruined and scores of records made smaller because of too much feed. There is always more danger of overfeeding than underfeeding, but this danger is greatly lessened where the scales are employed. Many facts pertaining to feeding come from experience, and though well known to the feeder, are difficult to express clearly in words, but suffice to say that in addition to all knowledge known to the art the herdsman must always, with the interest in results, at least keep in mind the condition of the animal and be prepared to decrease the ration at the first indication of the animal going off feed. At best, cows working hard for long periods tire of their feed and weaken under continued pressure. It is well occasionally to substitute for one feed a bran mash to rest and cool, so to speak, the digestive tract. Any indication of digestive trouble should receive prompt attention and a corrective in the form of raw linseed oil, salts or other laxative given.

The feeder who knows at all times the condition of the animal, the real purpose for which he is feeding and the amount and character of food best suited to accomplish the purpose, can drive safely the machine to the limit of its feeding capacity and milking ability.

I appreciate very much the kind attention you have given me. I presume that in this rambling talk I have overlooked many things you thought you would hear by coming. I will be glad to have you ask questions, and if I can possibly answer them I will be glad to do so; and if not, I will be fair and frank enough with you to say I do not know.

VOICE: What did you do with the cow when her eyes became dull?

PROF. VAN PELT: We immediately began taking the feed away from her. We were giving her twenty pounds and she gave fifty-seven pounds of milk. Then the indications were that she was getting all the feed she could handle. We began taking it away gradually. We gave her nineteen and one-half pounds the next day, nineteen the following, and continued decreasing the ration to seventeen pounds and it was then that she produced sixty and four-tenths pounds of milk. If you are feeding for records or high production, you need some kind of a safety valve. I have fed a great many cows through long-record periods. To the best of my knowledge, I never used any medicine except salts and linseed oil. Never very much of the former, but I presume scores and scores of gallons of raw linseed oil. If I were to start a cow on a large record to-day the first thing I would do would be to buy five gallons of oil. I might not need it for a long time, but when needed I would want it immediately. If you watch closely you get the first indication of the cow going "off feed." As soon as she does, do not feed anything the next meal except a little bran mash. Then give her a quart of raw linseed oil. If she is all right by the next feeding time, give her a little feed; if not, give another quart of oil. It will not hurt a cow, is just as effective as any laxative you can give, and in addition is nutritious so that she does not fall away in milk flow. I learned to feed with beef cattle, and we used to feed them four times a day, but Sunday evenings we gave them a little bran mash, taking all other feed away; then the next feed they were ready to go ahead. I have practiced that with dairy cattle when we had them on heavy rations, once in a while giving just a little bran mash.

MR. DUTTON: Do you recommend feeding grain with the silage or roughage, or separately?

PROF. VAN PELT: I do not believe in feeding grain by itself. When you study the nature of the cow you will find it is hardly practicable to give a cow a lot of ground grain. Horses masticate their feed, taking a great deal of time to eat. In masticating the feed is mixed with saliva, which is the first process of digestion, turning the starch into sugar. The cow bolts her feed, swallows it whole, and when she has plenty of time

she regurgitates and masticates it. Grain fed by itself goes into the first stomach and stays there; it is heavy, and when regurgitated, a portion of it does not come back to be masticated. A percentage in that way passes on undigested and is wasted. I do not believe in giving the cow any feed unless I am sure she is going to digest it and make milk out of it. There is really no use of passing raw material through a cow and getting nothing in return. At St. Louis we practiced cutting the alfalfa hay and feeding it with the grain. Every time we fed the cow we placed two pounds of alfalfa hay cut in quarter-inch lengths in the bottom of a galvanized pail. We spread the grain on top and passed a little jet of steam on the hay, moistening it enough so the grain would adhere to the stems. Warm water would have done just as well. The alfalfa served the same purpose as bran would have served; gave bulk to it and helped the cow digest every particle of it. We did not need to feed so much grain, we made a saving, and did not overtax the cow's stomach. That is a safe way to feed. When you feed so much bulk with the grain there is never any danger of the cow eating too much. They feed a great deal of straw in the old countries in that way and it has real value. If you do not feed cut roughage you should feed the grain with the silage.

MR. MCNERNEY: Considering the cost of feed, is it profitable to feed so much of it?

PROF. VAN PELT: That is merely a business proposition. If a man has a factory with a capacity of 200 automobiles a day it is a question of whether it is profitable for him to pass through that factory enough raw material at the present prices of steel, wood and the different materials, to make 200 machines, or whether it would be more profitable for him to put through enough material, considering the prices, to make 100. Now we all know what manufacturers do; they work to the limit of their factory, taking care of course not to break up the machinery or burn out the castings. I think that is what we ought to do on American dairy farms.

MR. BEAUPRE: Is there any value in feeding straw and corn stover?

PROF. VAN PELT: I practically covered that a while ago in speaking of feeding the cut straw with grain. I consider that a very valuable process of feeding. It always seems to me there is more value in corn stover and straw than we can determine by the chemical analysis. It would be a very foolish idea for us to expect our cows to get along from the standpoint of roughage with just corn stover and straw and timothy hay. But when we are feeding our cows a sufficient amount of protein feeds, sweet clover hay, etc., then an occasional feed once a day of straw or stover or timothy hay, by way of variety and for furnishing dry matter and bulk, is very valuable.

VOICE: Does the extra weighing and extra feeding require more help?

PROF. VAN PELT: Very likely a system of that kind would require more help and I recognize the fact that help is scarce. I do not recognize the fact that there is any particular reason why help should be scarce unless it is because there is something wrong with our system. I know that farmers around my town complain that it is impossible to get help and they excuse themselves for not doing a great many things they ought to do because help is scarce. I really am inclined to think that this is more of an excuse than a reality, because in my town we have one factory that works 700 men. They get smaller wages than the farmers are willing to pay. They work all day in dirt and grime, but for some reason or other they come in from the farms and work in factories. I have talked with those fellows, because I have wondered, and have had them say to me that they would rather go out and work on a farm if conditions were different. They want work the year around, and I presume that you men who are in the dairy business do not have the trouble with labor that many of our farmers do who have a great lot of work during the summer and nothing in the winter. The labor problem is one that every man must solve for himself on his own farm. Men have solved it and are solving it. I think it is not a question so much as to whether you can get the help as to whether you can make the help earn money for you. If they will make money for you and for themselves too there ought not to be much trouble.

MR. BARRETT: How can a persistent milker be turned dry?

PROF. VAN PELT: Very often we have cows in our herd that will not go dry or are difficult to turn dry. In such cases I would not by any means advocate turning the cow dry at the expense of her usefulness. In other words, I would not run the risk of spoiling a cow's udder merely to get her dry. Usually however, by giving her corn stalks, timothy hay and ice water and letting the hired man milk her we can get her dry pretty shortly.

MR. MATTESON: This question is handed to me: Will a cow live as long if she is required to work so hard? Now I would say that if a cow is made up as I am she will live longer.

PROF. VAN PELT: That question is very often asked. Sometimes I think it is a question that we hardly know about. I do not believe that a cow will die any sooner if she is fed judiciously, being made to produce heavily, than though she is fed improperly with the result of less production. In fact, I think she will live longer.

MR. GRANNEY OF BINGHAMTON: Does it not often ruin a cow for milking purposes to fatten her?

PROF. VAN PELT: It does unless you feed for the proper kind of fat. However, in the system I have outlined you do not have to get a cow very fat. She will not put on a very great amount of fat in 30 or 40 days. It will be possible, however, to increase her weight 100 to 125 pounds, but by feeding grains of a light character — bran, oil meal, oats — you put on a light, soft fat, which is milked off after the cow freshens. If after the cow freshens you continue feeding foods of a fattening nature, continue to encourage the placing of fat on her body for a long period at the expense of milk production, you will ruin the cow.

MR. MATTESON: If you were raising your own stock for your dairy, would you advise feeding the heifer at once along the lines of milk production instead of for fat?

PROF. VAN PELT: Yes, indeed. I would begin the feeding at least six weeks before the calf was born. A few weeks ago I visited a farm outside of Cleveland, where they have three world's champion cows. I have been very much interested in the manner in which they feed their cattle. They have heifers coming into milk weighing 1100 and 1200 and 1300 pounds, and the first

sight I had of those heifers it looked to me as though they were very fat, overdone. But when I placed my hand along the backbone and felt the ribs I found there was no surplus fat. Those heifers had simply been growing from birth to maturity. They had been fed foods rich in protein, foods that grew bone and muscle. They had built great frameworks. And I believe that is one of the great secrets of producing these great champion cows, growing the heifers well and preparing the cows for the great yearly records they are making.

MR. GRANEY: Many good feeders recommend a balanced ration, 1 to 5.5. I got the impression that you rather ignore that.

PROF. VAN PELT: No; I do not ignore the principle of the balanced ration, but I do ignore the argument that a ration 1 to 5 should be fed to cows, or 1 to 6, or 1 to 4. I do not think it is practical. It is a good guide, mind you; a 1 to 5 is a good general ration. But I say this, that a ration balanced for one cow is not balanced for another. A ration which is balanced for a cow to-day is not balanced for the same cow next month. In feeding for a purpose we should take into consideration the condition of the cow, the purpose for which we are breeding, and the purpose for which we are feeding, and then in a common-sense way work out a ration most satisfactory to that particular cow for the particular purpose for which we are feeding her. And then we will have a balanced ration. We have well-bred cows that are naturally beefy. Such a cow invariably will demand a ration as narrow as 1 to 4, and if you will look up the record you will find I fed such rations to Loretta D, who won the St. Louis World's Fair championship, fed to her rations as low as 1 to 3.5. After she left the fair she got fat as a beef animal, and never did good work afterward, as they did not cater to her. I remember one cow which was so intensely bred for milk production that she was inclined to work herself to death, just took every pound of feed you gave her, without regard to what it was, and made it into milk and butter fat. Had we fed that cow the same ration that we fed Loretta D she would have worked herself to death. So I say if we are going to be expert in our line — and this is a day when experts are successful men — we want to get right down and study the cow and

determine what that particular cow needs, and then supply her with it and the result will be a success. When the cow is being prepared to freshen we want to fatten her and in order to fatten a cow a balanced ration would be 1 to 7 or may be 1 to 8. During the first month of the lactation period the purpose is to stimulate milk production and take the fat off; then I would say a ration of 1 to 5 or 4. After 30 days the cow has become poor and we wish to keep up a certain amount of flesh, and we ought then to get back to a ration of 1 to 5 or 6. And so the balancing of our rations should be governed by the cow and her condition rather than by trying to govern a cow with an arbitrary balanced ration. A balanced ration is necessary, but we must determine the character of it in a commonsense way.

VOICE: When a cow has been thrown off on her yield, what is the best way to get her back as far as possible to her natural milk flow?

PROF. VAN PELT: It is necessary to determine the cause and remove it. There are different causes for cows declining in their milk flow. Sometimes they catch cold; sometimes it is due to excitement; other times it is due to lack of feed; and oftentimes it is due to overfeeding. One would need to know what the cause was. If from overfeeding I would give the cow light foods, then try to bring her back gradually. But as a rule, even though the causes are temporary, it will be impossible to bring the cow back until after she freshens. The best time to start to accomplish anything with cows is just before they freshen.

MR. EGAN: Which have you found it the most profitable to feed the ordinary dairy herd for milk production, two, three or four times a day?

PROF. VAN PELT: Under average conditions of milk production, twice a day. That depends a good deal on the character of the herd. Oftentimes we have herds so good that it is necessary to milk them three times a day. Then I would feed three times a day.

MR. EGAN: I have taken that up with some of the farmers in our section. I feed twice a day. Some of my neighbors

wonder why I get so much milk, and I say they take too much care of their cows and it costs them more to do it.

J. H. WHITE: What is the value of feeding roots and turnips, etc., to dairy cows?

PROF. VAN PELT: That is a thing that is hard to determine. They do not show by analysis that they have much feeding value. In fact, roots have about 90 per cent. of water and 10 per cent. real, dry feeding value. It is the succulence that they add to the ration. The value is physical rather than chemical; and there is great value in feeding corn silage, roots, beet pulp and foods of that character. They keep the cow in good condition. I always like to consider the feeding and caring for cows from the standpoint of our best natural conditions. Nature is an extra feeder when she wants to be. For instance, you know in the spring when your cows go to grass they come right up on their milk flow, give more milk than at any other time of the year. Let us stop and ask ourselves why; analyze the situation. We will find that there are five reasons why a cow gives more milk at that time of the year. The first is that she is out in the fresh open air. She gets all the fresh air she can breathe. That is a great thing—a large part of what milk is made of. The second is, she gets the sunshine. The third is, the water she drinks has the chill taken off by the warm rays of the sun. The fourth is that at that time of the year the atmosphere is just right, neither too hot nor too cold, about 45 to 55 degrees. She likes the warm air. These cost nothing. We can let fresh air and sunshine into the stable, and we can get the warmth and we can heat the water. All of that costs very little. It may be necessary to remodel the barn, but it is worth while. Fifth, she is surrounded by all the succulent, palatable, easily-digested, nutritious green feed that she can possibly eat, and she eats all she possibly can, and then if she possibly can she eats some more. We can imitate that by mixing feeds; give her palatability by giving variety; succulence through corn silage, roots and food of that character. We just follow this plan of nature; then we have the real way to feed our cows for profit.

MR. BROADFIELD: Would you give a cow all she wants of alfalfa hay?

PROF. VAN PELT: That would depend somewhat upon the cost of the alfalfa. Generally speaking, I would. But I would try to govern the feeding according to her wants. For instance, if I wanted a cow to have a wide ration during the preparatory period when trying to fatten her, I would give corn silage; then she would not want so much alfalfa. After freshening, in trying to stimulate milk production, if I had alfalfa or it was not too expensive I would cut down her silage ration, making her want more alfalfa, because I consider it the cheapest source of protein, especially when you grow it on your farm. I believe you are very fortunate in New York, because you can grow enough corn for silage, and for your grain, and you can grow alfalfa. In a country where a farmer has good cows, is willing to care for them properly, has such excellent markets as you have for your dairy products, and can raise corn silage and alfalfa hay — if you do not become prosperous it is your own fault.

MR. BROADFIELD: What is the best feed for a cow for fat content?

PROF. VAN PELT: Corn silage, ground grain, hominy feed, timothy hay and corn stover — foods of that nature, foods that are right in carbohydrates instead of protein.

MR. BROADFIELD: I think you do not understand what I mean. The alfalfa is rich in protein but deficient in fat. What I want is an economical fat ration to go with them. We have corn silage and alfalfa hay. In making up the foundation of the grain ration I want the most economical fat.

PROF. VAN PELT: You can so feed alfalfa and corn silage that you obtain almost any balanced ration you want. Then mix your grains, and feed some corn-meal, hominy feed, oil meal, cottonseed meal, distillers' grain, gluten feed, ground oats; any of those feeds which are cheapest, most palatable, in other words most economical in bringing your cow up on her flow of milk, which you can determine better than anyone can tell you. If

you add cottonseed meal and it gives you good response, add a little more on another day. I would not feed a cow over a couple of pounds of cottonseed meal. Then if you want more protein, put in perhaps a little gluten feed — whichever feeds give you the best response on the individual cow. That is the best way to determine the amount and character of the ration.

VOICE: Does it pay to raise beets to put in with the feed you mention?

PROF. VAN PELT: It depends altogether on conditions. I do not think that beets are much superior to corn silage. Which ever is most cheaply raised on each farm is the most advisable. For feeding cows for large records it is well to grow beets and feed in conjunction with the silage to give variety, but under ordinary circumstances it is only a question of which is the cheaper, silage or beets, or whether you could buy beet pulp for less money than you could raise beets.

MR. EGAN: Have you found many of the milking machines to be successful?

PROF. VAN PELT: Many have been placed in herds of cattle and many have been again taken out of the barn. There are machines on the market to-day, however, that seem to be proving a success. I believe that if they are operated intelligently, they are successful, especially for commercial dairies. Milking machines are like other machines — successful in the hands of some and unsuccessful with others. It is a question of operating. There are men mechanically inclined who can run machines very well; other men can get good production and take good care of the cow, but it is seldom that you find a man at once a good mechanic and a good man with the cow — such a one would be successful. It seems to me the present machines which cater to the individual cow — that is, milk one cow at a time — will prove a success.

VOICE: No machine is reliable unless you strip the cow out. The young cows that are brought up with the machine will give it all down; the others will not.

PROF. VAN PELT: That is true, and it is advisable to strip them out. Then, also, if anything happens, a teat gets sore or one is not milked out, the proprietor finds it out and the cow is not ruined.

MR. GOODRICH: Do you have farm county bureaus in Iowa, farm experts located in the different counties?

PROF. VAN PELT: This is a general movement throughout the United States. It is promoted by a wealthy man in Chicago. We have not gotten into it far enough to know much about it. Our legislature appropriated money three years ago for the purpose of stimulating and developing the dairy industry. I happened to be placed in charge as state dairy expert. We have done a great many things in Iowa to encourage better dairying, the testing of cows, the putting in of good sires, the replacing of poor cows with good cows, and all of those lines that would tend to increase production, and as a result we are getting ten million pounds more of butter manufactured in creameries than four or five years ago. Whether immediately due to the educational influence or other causes I am not prepared to say.

Speaking of the county farm bureau, however, I started something along that same line in one of our counties where there were nine creameries. The officers of the creamery acted on my suggestion to put the proposition up to their patrons and the patrons voted to tax the output of the creameries one-tenth of 1 per cent. per pound. That meant an income of approximately \$2,000 a year. We hired a man and put him in charge at \$1,500 a year and his expenses, and he worked among the farmers, telling them how to feed cows, about breeding cattle, what feeds to use, and they threshed these subjects out and the results were wonderful. If my memory serves me right, for every dollar spent there was a return of eleven dollars. That little organization is still in operation in Northern Iowa, and I think it proved itself one of the most successful of the kind. Your farm bureaus will certainly be very valuable to the whole community if the farmers themselves take an interest in them and encourage them as they should. Their value to you will depend

upon the good will you have toward them and the spirit with which you enter into the work.

MR. GILES: We have with us Mr. Sutton, who is the President of the National Ice Cream Association, also of our state association. Mr. Sutton will speak to you for a few minutes.

MR. SUTTON: I came here as a guest and your secretary asked me to say a few words. I am very much pleased to see such a gathering of representative men of the dairy business at this convention. In listening to Prof. Van Pelt and the questions which you asked him, I realized the intense interest that is manifested here. We as ice cream manufacturers depend entirely upon you for the product that we are to make ice cream from. With good materials we can make good ice cream, our markets will broaden and we will use more milk and cream. We as manufacturers of the State and National Associations, are working along the same lines that you are, and have been for years trying to encourage those of whom we buy to make good clean products for us to manufacture our goods from. We have been quite successful in some sections; in others it has been somewhat harder. But the goods that we get to-day are very different from what we got a few years ago. That is due to meetings just like you are having here, to enlighten, to educate, to talk over business affairs and listening to papers on the production of clean milk, the elimination of bacteria, how to improve the conditions of your barns and utensils in taking and handling milk.

The ice cream industry is perhaps much larger than the majority of you realize. In the United States last year there were produced 138,000,000 gallons of ice cream, nearly a gallon and a half per capita. The business has grown with leaps and bounds, since it has been possible for us to produce a clean product and open our doors and admit the public, take them into our confidence and show them that we are really making a wholesome ice cream. It all has come back to you; we have to depend upon you for those products. A great many men in the business own and operate model farms. They own creameries which are models, from which they put out a product in the very best known way, and it goes to their factories and is made up into ice cream. It cannot help but be guaranteed to be right, and goes out to man, woman and child

as a pure product. We want you to understand that we as manufacturers stand ready to do anything in our power to cooperate with you. We want you to work with us. We do not want you to feel that because some little manufacturer of ice cream has been arrested and some dairyman blamed, that we are antagonizing you. Those things exist in every line of business. We are trying to cooperate with the dairyman to produce more and better milk, which will help us to produce more and better ice cream. We want you to feel that your interests are our interests and that both the National and State Associations stand ready to back you up in your work and aid you in every way.

SEVENTH SESSION

FRIDAY, 10 A. M., DECEMBER 13

Meeting called to order by President Dollar.

MR. DOLLAR: I wish to call the attention of those present to Farmers' Week at Cornell, February 10-15. Those of you who have attended Farmers' Week at Cornell no doubt realize that it is worth while. It gives you a vacation and a chance to see the great State College and the things that go on there, so educational in every sense of the word. It is time well spent. I would advise as many as possible to try and attend.

Probably there are few things that interest the farmer more to-day than his buildings, putting them in shape and improving them. The time has come when something must be used to a great extent in place of lumber. Lumber is almost beyond reach of the farmer. We have learned to use a great deal of concrete. I am glad that we are to have a talk this morning by a man who has had many years' experience in concrete construction. He will go into details and you are at liberty to ask him questions about anything you do not understand. It gives me great pleasure to introduce to you Orrin F. Ross, of Lowville, N. Y.

CONCRETE CONSTRUCTION

ORRIN F. ROSS, Lowville, N. Y.

Concrete construction is a big subject and to go into details would take all day. When Mr. Griffith wrote me asking for a paper, he stated it would be at the last session which is not very

well attended — he put it that way — he did not want to get a man from out of the state for that reason. I am certainly very much gratified to see so many here. I will ask your indulgence in presenting at least the first part as a paper, since I can collect my thoughts much better and give it in a more condensed form than otherwise. Afterwards, if there are any questions on creamery or other special construction, I will try to answer them.

Concrete is a manufactured stone formed by mixing cement, sand and stone or gravel together, with water. It is as durable as rock, stronger than laid masonry, is practically fireproof, and adaptable to any and all forms of construction. However, it is with steel as a partner that has placed the two above and beyond all other materials in modern construction.

With the increasing cost of timber construction, which at best is unsatisfactory because of its being subject to the ravages of fire, wind and water; the steady toll of insurance, depreciation and paint is monstrous against the interest of first cost over wood construction, thereby proving the economy of concrete construction.

Brick and stone masonry has been used for years, but was too massive and cumbersome to ever satisfy the conditions which have developed in our stables, and especially in our cities. For example, a two-foot thick masonry wall shuts out too much light, also the extra foot of floor space occupied around the entire basement is important and must be figured in cost per square foot of space.

The glories of concrete could be expanded indefinitely, but it is my purpose to limit this paper to its field of utility as found in our modern dairy and farm construction.

Although Portland cement has been manufactured in the United States for forty years, it is only during the past ten years that its use has been common. In 1906 our annual production first reached over a million barrels; to-day it reaches hundreds of millions. So rapid has been its development that its use on our farms is the rule, rather than the exception.

While admitting the development of high skill and practice, concrete construction can be done, under direction, with home or cheap labor. Yet because of this apparent ease, many have made

costly mistakes by not informing themselves properly concerning the principles and correct methods of making good concrete.

For materials, Portland cement is the only kind we need to consider as practical. Portland cement is an artificial mixture of lime carbonate (3 parts), silica, alumina and iron oxide, or, in general terms, lime and clay. The brand selected is immaterial so long as it conforms to the specifications of the American Society for Testing Materials. The main differences are in the color and the rate of setting up.

The greatest care should be used in selecting the sand and gravel which constitutes the bulk of raw material. Sand is that portion of grains and pebbles which will pass through a one-fourth inch ring or four-mesh sieve, while gravel is that portion which is retained on the quarter and passes through a one and one-half inch ring. Both should be free from loam or vegetable matter and for best and most economical purposes, should be well graded from fine to coarse, always having the larger proportion coarse. It is often economical to screen fine sand over a forty-mesh sieve and discard the screenings. Sharp sand is preferable to smooth; the rough surface helps the adherence of the cement particles and is heavier, therefore, with less voids and requires less cement.

In finished concrete we want every surface covered with a film of cement, so the coarser the material the less surface exposed per given volume, and the greater the variation in the size of the sand grains the less is required to fill the voids.

The chief use of aggregate is to increase the volume of concrete without decreasing its strength. By knowing exactly the proportions of sand and gravel, the required amount of cement can be determined. As a rule the volume of correctly proportioned concrete is about one-eighth greater than the aggregate it contains.

The water used to crystalize the cement should be free from alkalies or acids, and added until for general work the mixture holds the water but spreads out on the mixing floor; or, if a so-called slush, to a quaking consistency.

Comparative volumes are used in proportioning materials. The standard or first-class mixture contains 1 part cement, 2 parts sand and 4 parts gravel or broken stone. However, we should not

confuse a 1:2:4 mixture with a 1:6 mixture, the former is 25 per cent. richer in cement. For measuring, bottomless boxes can be made of known volume, or with practice a man will measure by shovelfuls very accurately for ordinary work. This method allows the overseer to readily call for a mixture in proportion to the materials and to the construction at hand. A bag of cement contains eight ordinary shovelfuls; therefore, for a bag batch of a standard mixture it calls for sixteen shovelfuls of sand and thirty-two shovelfuls of gravel.

Next, after proper materials and proportions, comes proper mixture and handling. The mixing should continue until the color is uniform, regardless of times turned. This point can be determined by drawing the flat of the shovel across the heap. If not properly mixed, streaks of sand or cement will show. In especially fine work requiring careful mixing, the mortar — namely, the sand and the cement — should be mixed separately before adding the coarse material, which can be added with a minimum of labor after the mortar has been mixed wet, because the bulk of the material only has to be turned a few times. The mortar should be as dry as possible during mixing, for best results. If the sand is damp the cement will ball and stick to the grains in contact and delay filling the voids. However, by turning and wetting more, they adjust themselves properly. We have found that water added in a spray from hose or sprinkler during the turning gives most satisfaction. A surplus of water separates the cement particles from the sand grains. The mixing board should be large and roomy according to the number of mixers, watertight surfaced, and having a low rim to prevent surplus water carrying portions of cement off the board. The board should be located with reference to materials and to position of delivery to forms. Plans can be often laid so that the materials can be shoveled directly to the mixing board and then directly to forms. The final turn should be with reference to placing.

Good runways and metal-tray wheelbarrows should be provided, if there is any distance between points. For wall work, runways should be placed so that the wheelbarrows can be dumped directly into the forms. Short-handled, square-pointed shovels are the proper turning tools and are important if a quantity of ma-

terial is used. The tools and the mixing board should be cleaned at the close of each work period, scraped and then scrubbed, using water.

The first consideration of any building is the foundation which supports and preserves the building. The size of the base is determined by the nature of the earth upon which the footing is built, and upon the weight of the building and its contents. The outer rim of foundation should extend lower than the centers, forming cup-shaped bottoms, for greatest efficiency. Steel reinforcing rods laid in the concrete at the top and bottom of walls will prevent cracking or settling. The foundation wall should extend below the frost line, if the ground is subject to heaving. The trench can be partly filled with cobble or broken stone and drained at the low points. Slush concrete poured on the top layers gives an excellent foundation with a minimum of labor and material. I prefer to have my outside forms extend to frost line, then the ground may heave without securing a hold on the wall. If the ground is subject to heaving, the trench can be used to within a few inches of the floor line for the inside forms. The wall forms should be well braced in position and tied together by means of bolts or twisted wire, to prevent spreading while the concrete is being rammed. If a smooth-finished surface is desired, matched lumber, oiled or shellacked, is used to prevent variations, and if the forms are removed while the concrete is still green it is very easy to obtain a fine surface by rubbing off the outer film of cement and the form marks, leaving a surface equal to a plastered wall in appearance and much superior in fact. Green concrete should be protected from too rapid drying during warm weather. Walls that have proper ventilation across them will seldom gather moisture even if solid.

Insulated walls may be obtained by constructing double concrete walls, by plastering on hollow tile, and by using lath and cement plaster in various ways, or a solid wall may be built to the windows and then framed between, the inside being lathed and plastered smooth, the outside made tight with paper and ship lath or clapboards. Stucco or rough finish are best for exterior work. More attention should be paid to exterior finish, and rough or stucco work can be paneled by putting rubbed borders around the openings.

No concrete floor should be laid in direct contact with the ground. All organic matter should be removed and if a fill is required, replace with field or broken stone, coarse gravel or cinders. These can be graded from one to three inches from the surface, depending upon the material and the use to which the floor is to be put. No flat surfaces of large stone should be allowed nearer than three inches to the grade line, if the spaces are filled in and leveled with gravel, then concrete having smaller proportions of coarse material can be placed on the wet surfaces. This will allow the cement to fill the voids in the top layers of stone, giving us a floor four to six inches thick, with a minimum of labor and material — a floor insulated with air spaces and small points of contact between the concrete and ground, which is dry, warm and strong. The floor can be further insulated by layers of tar paint and tar paper between two layers of concrete. Cork brick or a coat of hot asphalt can be spread over the standing platform for the cows and then sawdust tamped in to give a rough surface and to prevent the animal coming in direct contact with the asphalt.

All platforms where the animals are required to stand or walk should be finished rough with a wooden float. Mangers, feeding alleys, etc., should have a top wearing coat of sifted sand and cement, finished smooth with a steel trowel.

When two layers are used, the base should be mixed wet, as a rule, and the top dry enough to take up the surplus water and if placed soon, i. e., before the base gets its initial set, the two layers will be as one solid floor. Floors subject to hard wear, such as milk rooms and creameries, should have a surface of rich mortar proportioned about 1:1 of cement and medium sharp sand which will dent but resist chipping and will wear off smooth. (To prevent dusty floors, shape with wood float and allow to lay until dry enough to finish with the steel trowel. If worked too early with the trowel, too much fine material is worked to the surface.) Generally, all floors should be laid so as to drain to some point, and if practicable have a bell-trap cesspool at that point.

Economy of labor, convenience and sanitation should always be considered in planning work. One should not attempt to build with concrete until sure that he knows what he wants and how

he wants it, because when properly placed, concrete construction is not easily changed. How often we hear dissatisfaction expressed because of improper measurements. Plans or systems had hurriedly been carried out, when often a couple of hours studying over drawn plans would have saved much inconvenience and expense. Even with the best of plans, many changes are made to advantage during erection.

By using the foregoing principles any number of useful structures can be built upon the farm, such as fences, water tanks, tile, blocks, etc.

At present the construction of concrete silos is being developed and in the near future they will be as common on our dairy farms as concrete floors are common in our dairy stables to-day. When properly constructed, concrete silos have all the advantages and characteristics of a good silo, namely, air-tight, water-tight, rigid, vermin proof, with a minimum of surface — a silo which is cheap, durable, simple of construction and effective in preserving silage. A few minutes figuring ought to convince any man that any other kind is wasteful, if he figures the cost of depreciation of a wood silo against the interest on a concrete one. Consider that a properly constructed concrete silo is proof against fire, wind and time.

The monolithic (solid wall), hollow wall, block and plastered concrete silos are the four types in most general use. All types should be reinforced with steel to carry the entire pressure, and we should make allowance for extra pressure of watery silage, such as vines make, because I believe in the future the silo will be used more for supplementing the pastures and that we will use other crops with the corn in the silo.

The frost will not penetrate a six-inch concrete wall as readily as it does a wet two-inch stave. We should be very careful in building the foundation, because the weight of a thirty-five-foot silo plus one or two hundred tons of silage is great.

From my observations I believe the monolithic silo is the strongest, most permanent and practical. It can be reinforced easily with twisted steel to withstand any amount of pressure that may be required. The doors can be built separately or in one continuous opening by letting every second horizontal rod

pass through the opening. The concrete can be placed very wet, thereby giving a very dense, strong construction. I believe that the inner wall should be water-proofed by painting the surface with hot tar or asphalt roofing paint. This coating fills all pores, and water-proofs in such a way that the walls will not absorb any moisture from the silage, and is not affected by the acids in the silage.

Old wood silos which are still rigid can be made better than new by lathing and plastering on the inside with Portland cement plaster. Lime should not be used in the mixture which comes in contact with water or acids.

VOICE: What do you use for concrete silo walls?

MR. ROSS: That would depend somewhat upon the thickness of your walls. A six-inch wall properly reinforced is plenty heavy enough — reinforce six-inch wall with triangle mesh made especially for concrete work — twisted, spiral and deformed bars.

VOICE: What about American No. 9 woven wire fence?

MR. ROSS: Properly hitched on the ends it would be all right. I should want to run two half-inch rods up each side of the opening. Wind the ends around and then use a long reinforcing rod across the opening; tie the walls together in that way. Use one part of cement, two of sand and four of gravel, mixed wet and poured. The footing or foundation will depend upon the weight and the ground you are putting it upon. With a concrete silo you should build a wide foundation. A little settling would throw it out of balance.

VOICE: Cannot you make about three thicknesses on the way up; for instance, make a third of the way eight inches, and narrow down to less thickness?

MR. ROSS: That can be done, but the main cost of silos is the form work, and unless you have adjustable forms you are in trouble. A six-inch wall properly made and reinforced will support practically any height.

PRESIDENT DOLLAR: The London Concrete Machinery Co., of London, Ontario, makes an adjustable concrete form. They are used in St. Lawrence county. You can start at the bottom with eight inches, and every form heads in a little and you can finish up at the top about four inches, if you wish.

MR. ROSS: If the slope is gradual it is all right. Many barn walls start with a wide bottom—they are afraid of concrete. When you get a form that is wider at the bottom than at the top, you begin to have trouble. The wide part of the sloping tends to tip over or else the sloping form will rise up, and if not very carefully fastened and braced, the walls will get out of plumb.

VOICE: In what proportion do you mix plaster for a silo?

MR. ROSS: That depends on the material used. If you have sharp sand in silo work you can use this, 1 to 2. The more sand you get in and have it properly proportioned, that is, so the cement will cover it entirely, the harder plaster you will have. The more cement you put in the plaster the softer it will be. The same is true in constructing floors. If you make a hard top of 1 to 2 1/2 or so, it is likely to chip off; but if made 1 to 1 with a medium sand you have a floor that will not chip.

VOICE: How thick should the plaster be put on?

MR. ROSS: You can use the wood lath by grooving. Take two corners off, leaving the outside. It is more economical. Put it on so the concrete will push through the metal and have not less than half an inch cement plaster between the wall surface and the metal. We should be particular to have the plaster pushed back against the boards. The metal lath will prevent the plaster from cracking.

Another form of construction which can be followed cheaply: Build a foundation as you would for any silo, taking one by two-inch strips, bent around four-ply, giving a 4-inch circular sill; put up 2x4 siding, 12x16 inches on center, and then put around hoops countersunk flush with outer surface anchored to foundation. These hoops take up the pressure. Half-inch boards put around the inside and the metal lath plastered against those, and metal lath and plaster on the outside, gives a very cheap wall silo.

VOICE: Did I understand you to say that you advised using plank for stock to stand on?

MR. ROSS: I am not especially opposed to it, but I do not see any advantage in it if the floor is properly insulated. In our own stable we insulate also with tar and paint, but under tests we can see no difference between that and the broken stone insu-

lation. The wood itself is unsanitary. You cannot put it in tight enough but what some liquid will go down through and that makes it damp. If you want something soft to stand on, while your floor is new run one-half to three-fourths of an inch of hot asphalt on top and tamp sawdust in and it will be all right. In our section I do not know of any stables overlaid with plank.

VOICE: There is no trouble during the warm weather. In the winter time you could have a lattice work, hinged and laid down, to put sawdust on or hold the bedding — not solid.

MR. ROSS: That is much worse than plank, as all the liquids would go through and, held by the sawdust, will become foul and unsanitary. I would have a tight or solid wood floor if any, matched just as closely as I could get it. However, a concrete floor if properly insulated from the ground will be all right. If floors are laid directly on the ground, as in milk rooms or detached buildings especially, the frost will pass through the floor, freeze and heave the ground much quicker than through ground stone filling. Also if there is moisture in the ground it will come up through. You have the wrong impression about water coming through a concrete wall. Usually moisture will gather by condensation where there is no ventilation across it. Where there is ventilation, moisture will not gather. In our own stables there is solid wall to the top.

VOICE: In case of slipping upon the cement floor, what is the remedy?

MR. ROSS: As I stated, we should be very particular never to allow a floor to be touched with a steel trowel. Leave it rough with a wooden float, and you can leave it still rougher by simply pulling up the float. If you have a floor that is too smooth, probably the quickest and cheapest way to change the surface is to treat with a weak solution of muriatic acid, which will dissolve the cement off the top of the sand grains, then immediately wash off the acid with plenty of water to stop the action. The top can be readily roughened with a bush hammer.

VOICE: I would like to say that if you put an air space under your cows it will solve the difficulty.

MR. ROSS.— Air space is one of the best insulators there is, but you can get the air space practically as well with simply field,

crushed or broken stone, and then a layer of paint or asphalt will complete the insulation. There are many ways of insulating. Concrete is not so good a conductor as many of us think.

VOICE: Are many floors spoiled by putting salt on to melt the ice? Would not that spoil the cement? We lost two floors in succession in the milk room, as we thought by using salt on ice around the drain hole to melt the ice.

MR. ROSS: I have not had any experience in the use of salt. It is one of the ways commonly used in working cement in cold weather, putting salt into the mixture. I do not favor it. While a small proportion will not weaken the wall, it will make a discolored wall; the moisture coming out brings salt with it and streaks it. In cold weather I prefer heating up the water and the sand.

VOICE: Please explain how to get around the door proposition with the monolithic silo. I understood you to say you would have continuous doors and run the reinforcing rods across.

MR. ROSS: The doors should open on the inside. On the inside of the wall we have our form frames so that they taper in and can be taken out. On the inside of this frame we put two-by-four forms with screws right through the door frame. On the inside of that, flush with the inside of the frame, we put a one by three inch strip. When these are removed the shoulders are left, first, for inch boards which press against the concrete and are flush with the inside, and second, for two-inch matched plank which are four inches shorter and fit the second groove left by the two by four forms. Between the boards and plank we use a layer of tarred paper, making the opening air and water tight. In front of the shoulder there should be one of the reinforcing vertical rods.

VOICE: Do you advocate placing reinforcing rods up and down?

MR. ROSS: I am in favor of using rods. The horizontal we space one foot apart; the vertical, two and one-half feet apart. The total cost of reinforcing a silo with three-eighths to one-half inch rods is \$10 to \$18. They will stand the pressure of a thousand pounds per square foot at the bottom, and it is seldom we have over three to four hundred thousand pounds. We use a twisted rod, made purposely.

BY-LAWS OF THE NEW YORK STATE DAIRYMEN'S ASSOCIATION

Section 1. Any person who shall pay into the treasury of the association one dollar shall be a member of the association until the next annual meeting, and any person who shall pay into the treasury five dollars shall be a life member and exempt from any annual payment. Honorary members may be elected by a majority vote at any annual meeting of the association in recognition of services rendered to the dairy interests of the state, and they shall be entitled to all privileges of membership except voting for officers.

Section 2. The full management of the affairs of the association shall be in the hands of a board of directors, which shall consist of the president, secretary and treasurer of the association, ex-presidents as provided in section 4, and six elected members.

Section 3. The association shall hold an annual meeting at such place as shall be determined by the board of directors, to commence on the second Tuesday of December, unless some other date shall be selected by said board. At such convention at least two sessions shall be devoted to subjects concerning butter and cheese making.

Section 4. The elected officers of this association shall be a president, vice-president, honorary vice-presidents, secretary, assistant secretary, treasurer and six directors, and they shall be chosen at the time of each annual meeting and from among the life members of the association, and at the session during which the election of officers is indicated on the program.

The officers shall enter upon the duties of their respective offices thirty days after election and shall hold offices for one year or until their successors shall be duly elected and qualified.

Every ex-president of the association shall be ex-officio member of the board of directors for five years after the expiration of his term of office as president.

Section 5. No person shall be eligible to the office of president of this association for more than two years in succession. The president shall be ex-officio chairman of the board of directors.

Section 6. The vice-president shall perform the duties of the president in his absence.

Section 7. The secretary shall keep the minutes of all meetings, be ex-officio secretary of the board of directors, and in case an exhibition of apparatus and products is held, the usual duties of such an exhibit shall devolve on him. He shall conduct the correspondence of the association, receive all moneys due it, and promptly remit same to the treasurer.

Section 8. The assistant secretary shall perform such duties as may be assigned to him by the secretary.

Section 9. The treasurer shall receive the moneys from the secretary, keep a strict account thereof and pay them out on the order of the secretary.

Section 10. The books and accounts of the secretary and treasurer shall be examined by an auditing committee to be appointed at each annual convention by the president.

Section 11. The board of directors shall decide each year whether or not an exhibition will be held in connection with the annual convention, and in case an exhibition is held, the president, secretary and treasurer shall constitute an exhibition committee, which shall have full charge of the exhibition and authority to enter into necessary contracts. This committee shall also have power to annul the exhibition if circumstances so require.

Section 12. Public notice of any regular meeting of the association shall be given by the secretary at least thirty days before the date of said meeting, and a written or printed notice of said meeting shall be mailed to each member of the association. All meetings of the board of directors shall be called by the president, or by any three directors. The secretary shall send to each director a notice of any meeting at least five days before the date of its occurrence.

Section 13. Any vacancy which may occur in the board of directors or in any office of this association may be filled by the board for the unexpired term for which such officer was chosen.

Section 14. The place of business of this association shall be where the secretary has his place of residence.

Section 15. At each annual meeting the president shall appoint the following committees from among the life members of the association. A committee on resolutions of five members, a nominating committee of three members.

Section 16. The board of directors shall require the secretary and treasurer to give a good and sufficient bond.

Section 17. A quorum of the board of directors shall consist of five members. A majority of the members of any committee shall constitute a quorum.

Section 18. These by-laws may be amended by a majority vote of the members of the association present at any annual meeting, provided a copy of the proposed amendment has been transmitted to the members of the association with the notice of the said meeting.

EXHIBITION HALL

Those in attendance at the Annual Meeting of the New York State Dairymen's Association had the privilege of inspecting the latest and most improved dairy machinery. The dairymen of this state can feel justly proud of the men who are identified with the manufacture of dairy apparatus. They are ready to do more than their share and go even more than half way to meet the producers and manufacturers of milk. The following list, alphabetically arranged, are those who had exhibits. They gave loyal support to the annual meeting by advertising the convention from their various offices and through their representatives traveling over the state.

Armstrong Cork Co.....	50 Church St., New York City, N. Y.
Insulation Material.	
Adirondaek Silo Co.....	Malone, N. Y.
Mfg. Wood Silos.	
F. X. Beaumert Co.....	Antwerp, N. Y.
Mfg. Fancy Cheese.	
Champion Cooler Co.....	Cortland, N. Y.
Milk Coolers and Dairy Supplies.	
Colonial Sab. Co.....	C. H. Morgan Building, Buffalo, N. Y.
Factory and Table Salt.	
Creamery Package Mfg. Co.....	Chicago, Ill., and Albany, N. Y.
Dairy Supplies.	
Chase Motor Co.....	Syracuse, N. Y.
Mfrs. Motor Trucks.	
Corn Product Co.....	17 Battery Place, New York City, N. Y.
Gluten Feeds.	
Drew Carrier Co.....	Rome, N. Y.
Barn Equipment.	
De Laval Separator Co., 165 Broadway.....	New York City, N. Y.
Mfrs. De Laval Separators.	
Dominion Chemical Co.....	Syracuse, N. Y.
Dominion Washing Powder.	
Department of Agriculture.....	Albany, N. Y.
Dairy Department, Cornell University.....	Ithaca, N. Y.
Empire Cream Separator Co.....	Bloomfield, N. J.
Mfrs. Empire Cream Separators.	
J. B. Ford Co.....	Wyandotte, Mich.
Mfrs. Wyandotte Washing Powder.	
Gude Bros.-Kieffer Co.....	21 Jay St., New York City, N. Y.
Butter Merchants.	
G. H. Gowing.....	Syracuse, N. Y.
Dairy Supplies.	
F. E. Hudson Sons.....	Ellisburg, N. Y.
Mfrs. Wood Silos.	

Chris Hansen Laboratory.....	Little Falls, N. Y.
Mfrs. Butter Color, Etc.	
Harder Mfg. Co.....	Cobleskill, N. Y.
Mfrs. Wood Silos.	
International Agricultural Corporation.....	Buffalo, N. Y.
Mfrs. Fertilizer and Lime.	
International Harvester Co. of America.....	Auburn, N. Y.
Mfrs. "Blue Bell" Cream Separators.	
James Mfg. Co.....	Ft. Atkinson, Wis.
Mfrs. Barn Equipment.	
Louden Machinery Co.....	Albany, N. Y.
Mfrs. Barn Equipment.	
Leader Evaporator Co.....	Burlington, Vt.
Sugar Making Supplies.	
The LeSieur Vacuum Milk Can.....	New Athens, Ill.
Mfrs. Vacuum Milk Shipping Cans.	
H. W. John Manville Co.....	618 Gurney Building, Syracuse, N. Y.
Roofing and Insulating Materials.	
Merrell-Soule Co.....	Syracuse, N. Y.
Mfrs. Powdered Milk.	
Miller Pasteurizing Co.....	Canton, Ohio
Pasteurizing and Ice Cream Machinery.	
New York State Board of Health.....	Albany, N. Y.
New York State School of Agriculture.....	Canton, N. Y.
Dr. C. E. North.....	30 Church st., New York City, N. Y.
Oliver Chilled Plow Co.....	Rochester, N. Y.
Mfrs. Oliver Chilled Plows.	
Osgood & Schornstheimer.....	Syracuse, N. Y.
Vacuum Oleaners and Washing Machines.	
O. B. Olmstead.....	Pulaski, N. Y.
Kerosene Oil Engine.	
Quick & Thomas.....	Auburn, N. Y.
Barn Equipment.	
Sharpless Separator Co.....	Westchester, Pa.
Mfrs. Sharpless Cream Separators.	
Syracuse Board of Health.....	Syracuse, N. Y.
Unadilla Silo Co.....	Unadilla, N. Y.
Mfrs. Wood Silos.	
Vermont Farm Machine Co.....	Bellows Falls, Vt.
Mfrs. U. S. Cream Separators.	
Wells-Richardson Co.....	Burlington, Vt.
Butter Color.	
Worcester Salt Co.....	New York City, N. Y.
Factory and Table Salt.	
Wasson Stanchion Co.....	Cuba, N. Y.
Mfrs. Wasson Stanchions.	

LIFE MEMBERS

A

Aldrich, H. G.....	Gouverneur, N. Y.
Allen, L. L.....	Watertown, N. Y.
Austin, H. E.....	Whitesville, N. Y.
Andrews, Windham	Newhope, N. Y.

B

Baker, A. D.....	Aurelius, N. Y.
Baker, J. V.....	Gouverneur, N. Y.
Bauder, F. W.....	Fort Plain, N. Y.
Barnasky, Geo. W.....	Greene, N. Y.
Baumert, Chas. H. J.....	Antwerp, N. Y.
Baird, J. H.....	Speedsville, N. Y.
Beardslee, W. E.....	Arcade, N. Y.
Burlingham, W. F.....	Frewsburg, N. Y.
Bean, M. C.....	McGrawville, N. Y.
Bent, Roy H.....	Antwerp, N. Y.
Baumert, Jos. A.....	Antwerp, N. Y.
Beebe, Verlett C.....	Arcade, N. Y.
Benton, H. F.....	Cortland, N. Y.
Blanding, Frank	Hubbardsville, N. Y.
Boynton, J. E.....	Norwood, N. Y.
Buckley, Wage	Port Jervis, N. Y.
Burger, Chas. F.....	New York, N. Y.
Burrell, E. J.....	Little Falls, N. Y.
Burrell, Loomis	Little Falls, N. Y.
Butts, M. N.....	Cuba, N. Y.
Blish, Otis	Halcott Center, N. Y.
Brownell, William	74 John St., New York, N. Y.
Bull, Geo. E.....	Rural Hill, N. Y.
Brown, A. E.....	Batavia, N. Y.
Barnett, Maurice	11 Pine St., New York, N. Y.
Brown, A. C.....	West Monroe, N. Y.
Beachnut Creamery Co.....	Leroy, N. Y.
Baker, A. W.....	Genoa, N. Y.
Brainardsville Creamery Co.....	Brainardsville, N. Y.
Bassett, R. N.....	Burke, N. Y.
Bodurtha, F. P.....	Bainbridge, N. Y.
Bradley, E. C.....	Madrid, N. Y.
Babeock, F. M.....	Gouverneur, N. Y.
Bailey, Prof. L. H.....	Ithaca, N. Y.

C

Campbell, Arba	Oswego, N. Y.
Carman, Geo. W.....	Mecklinburg, N. Y.

Carpenter, R. W. cr. Onondaga Milk Ass'n.....	Syracuse, N. Y.
Cain, M. T.....	Elmira, N. Y.
Church, Seth R.....	Syracuse, N. Y.
Cheney, Newel	Poland Center, N. Y.
Childs, S. A.....	Malone, N. Y.
Chandler, Herbert G.....	Ogdensburg, N. Y.
Clark, Harry N.....	Potsdam, N. Y.
Clark, J. P. E.....	Binghamton, N. Y.
Clark, A. L.....	Copenhagen, N. Y.
Clarke, C. T.....	Canton, N. Y.
Cook, Allison	Denmark, N. Y.
Cook, H. E.....	Canton, N. Y.
Converse, F. A.....	200 Pearl St., Buffalo, N. Y.
Corbin, Amasa	Gouverneur, N. Y.
Cogswell, P. J.....	Rochester, N. Y.
Combs, M. D.....	Holland Patent, N. Y.
Comstock, W. G.....	Chuckery, N. Y.
Gotton, A. S.....	Clifton Springs, N. Y.
Counselman, J. F.....	Newark Valley, N. Y.
Collier, D. M.....	Savano, N. Y.
Cochran, Wm. F.....	East View, N. Y.
Cole, B. J.....	Willink, N. Y.
Coons, Samuel	Prattsville, N. Y.
Cooper, Geo.	Morristown, N. Y.
Crasper, B. S.....	Waddington, N. Y.
Crittenden, Amas G.....	Cincinnati, N. Y.
Cuddeback, Benj. E.....	Port Jervis, N. Y.
Curtis, Albert W.....	Utica, N. Y.
Curran, Edward	Utica, N. Y.
Carr, Frank J.....	Tully, N. Y.
Clark, Manly	Suffolk, N. Y.

D

Daniels, W. H.....	Ogdensburg, N. Y.
Dawley, F. E.....	Fayetteville, N. Y.
Davendorf, Abram	Minden, N. Y.
Dillon, John J., "Rural New Yorker".....	New York, N. Y.
Doekstader, M. W.....	Evans Mills, N. Y.
Douglass, C. C.....	Chateaugay, N. Y.
Dryden, C. J.....	Copenhagen, N. Y.
Dunaway, F. P.....	Watertown, N. Y.
Dunham, W. C.....	Cuba, N. Y.
Dusenbury, E. G.....	Olean, N. Y.

E

Eastman, R. S.....	Belleville, N. Y.
Eastman, Almond B.....	Waterville, N. Y.
Eibert, Henry	Skaneateles, N. Y.

Ely, L. D.	Rochester, N. Y.
Ennis, J. A.	Pattersonville, N. Y.
Erickson, Henry	Kennedy, N. Y.
Elwood, H. C.	Buffalo, N. Y.
Everett, E. A.	Potsdam, N. Y.

F

Farmers Coöperative Creamery Co.	Crown Point, N. Y.
Fanson, F. W.	Bergen, N. Y.
Fisher, A. E.	Madrid, N. Y.
Fitch Bros.	Morris, N. Y.
Fitzgerald, L. J.	Cortland, N. Y.
Flanders, Geo. L.	Albany, N. Y.
Fowler, Ralph C. H.	Auburn, N. Y.
Frederiksen, J. D.	Little Falls, N. Y.
Fulton, J. E.	Carthage, N. Y.
French, R. A.	Bennington, N. Y.

G

Giles, W. N.	Skaneateles, N. Y.
Genesee Salt Co.	Piffard, N. Y.
Gilbert, Harris	Sidney, N. Y.
Gillespie, Geo. J.	20 Vessey St., New York, N. Y.
Gillett, Eilson G.	Marcellus, N. Y.
Gilmour, Robert	Morristown, N. Y.
Goodrich, D. A.	South Champion, N. Y.
Godfrey, F. N.	Olean, N. Y.
Gordon, S.	Chazy, N. Y.
Gordon, M. E.	Rushford, N. Y.
Grant, R. P.	Clayton, N. Y.
Gray, Stephen H.	Elmira, N. Y.
Griffith, W. E.	Madrid, N. Y.
Griffith, William D.	Oakwood, N. Y.
Groff, Floyd B.	St. Johnsville, N. Y.
Gregory, M. C.	Unadilla, N. Y.
Green, Wilson	Willetts, N. Y.
Grant, H. L.	Copenhagen, N. Y.
Gibby, J. L.	Arcade, N. Y.

H

Hall, Lott	Gouverneur, N. Y.
Hall, William A.	11 Pine St., New York, N. Y.
Hall, Fred P.	Jamestown, N. Y.
Harrington, A. D.	Oxford, N. Y.
Harrington, O.	West Bangor, N. Y.
Harding, H. A.	Geneva, N. Y.
Harter, I. S.	Otisco, N. Y.
Harter, G.	Otisco, N. Y.
Hapgood	Malone, N. Y.

Halliday, Jas. E.	Massena, N. Y.
Hargrave, A. B.	Heuvelton, N. Y.
Heller & Mertz	New York, N. Y.
Helmer, A. E.	Evans Mills, N. Y.
Howard, W. R.	Newark Valley, N. Y.
Hogue, Jas. A.	Angelica, N. Y.
Hogue, Geo. E.	Arcade, N. Y.
Hotten, Nicholas	Portville, N. Y.
Hunter, John	Sterling Valley, N. Y.
Hunt, I. S.	Adams, N. Y.
Hungerford, William	Ithaca, N. Y.
Hyde, Fred W.	Jamestown, N. Y.
Hyde, Geo. O.	Cortland, N. Y.
Hobart, W. W.	Friendship, N. Y.
Holliday, Frank	Massena, N. Y.
Harkness, E. R.	Dellhi, N. Y.
Hollingworth, D. H. W.	Utica, N. Y.
Hayes, Fred J.	Potsdam, N. Y.

I

Isbell, E. C.	Cattaraugus, N. Y.
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J

Jackson, D. C.	Boonville, R. F. D., N. Y.
Jay, Albert H.	193 Elm St., Utica, N. Y.
Johnson, Allen	Malone, N. Y.
Jones, Gen. Ed. F.	Binghamton, N. Y.
Jones, Frank L.	Utica, N. Y.
Jones, O. E.	Jamestown, N. Y.
Jones, E. L.	Delevan, N. Y.
Jordan, Dr. W. H.	Geneva, N. Y.

K

Kay, William E.	Herkimer, N. Y.
Kellogg, O. U.	Cortland, N. Y.
Kent, D. E.	Lowville, N. Y.
Keller, W. H.	Fulton, N. Y.
Kelly, Dr. W. H.	233 Western Ave., Albany, N. Y.
Keeney, F. B.	Belvidere, N. Y.
Kirkland, Robt. R.	Philadelphia, N. Y.
Kilmer, C. B.	Rock City Falls, N. Y.
Kinne, H. E., Jr.	Syracuse, N. Y.
Knapp, W. H.	Cortland, N. Y.
Knapp, B. R.	Cortland, N. Y.
Knox, H. M.	Canton, N. Y.
Knapp, C. L.	Lowville, N. Y.

L

Lamont, C. M.	Owego, N. Y.
Lanton, A. W.	Auburn, N. Y.

Langwill, Peter	Rochester, N. Y.
Lang, H. C. 97 Warren St.,	New York, N. Y.
Lawson, W. H.	New York, N. Y.
Laloue, Judson A.	Richville, N. Y.
Livingston, John	New York, N. Y.
Law, Dr. James	Ithaca, N. Y.
Lyon, F. M.	Hobart, N. Y.

M

MeAdam, Robert	Rome, N. Y.
McAdam, W. H.	Heuvelton, N. Y.
McBane, A. D.	Brockport, N. Y.
McAllister, Geo.	Antwerp, N. Y.
Matteson, H. S.	Morris, N. Y.
Malby, Geo. R.	Ogdensburg, N. Y.
Mather, J. J.	Bishop Street, N. Y.
Matther, W. M.	Belleville, N. Y.
Martin, Geo.	Ithaca, N. Y.
Maxon, Grove	Cortland, N. Y.
Merry, Fred	Verona, N. Y.
Miller, Dr. E. P.	New York, N. Y.
Miles, Ira C.	Edwards, N. Y.
Miller, D. H.	Albion, N. Y.
Moreland, Forest G.	Ogdensburg, N. Y.
Morris, C. D., Dr.	Pauline, N. Y.
Moore, Dr. V. A.	Ithaca, N. Y.
Mott, Frank	Cuyler, N. Y.
Munson, E. S.	Franklin, N. Y.
Mather, A. G. & F. D.	Belleville, N. Y.
Merrell-Soule Co.	Syracuse, N. Y.
Marshall, A.	Little Falls, N. Y.
Morris, J. M.	Liberty, N. Y.
Maine, G. G.	Lisbon Center, N. Y.
Mason, C. C.	Burke, N. Y.
Merritt, E. A.	Potsdam, N. Y.
McLoud & Ormsbee	Utica, N. Y.

N

Norton, E. P.	Attica, N. Y.
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O

Oster, J. E. F.	Borodino, N. Y.
Otis, R. C.	Denmark, N. Y.
Owens, Jas.	Steuben, N. Y.
Odell, B. B., Jr.	Newburg, N. Y.
Oliver, Arthur	Chateaugay, N. Y.
Overacker, A. W.	Gouverneur, N. Y.
Older, M. A.	Ellington, N. Y.
Older, Clyde	Kennedy, N. Y.

Oakes, Frank S.....	Cattaraugus, N. Y.
Owens, Jas. H.....	Chemung, N. Y.
Overton, F. C.....	Adams, N. Y.

P

Partridge, O. T.....	Ogdensburg, N. Y.
Patrick, W. C.....	Sherman, N. Y.
Pease, Ira	Oswego, N. Y.
Peabody, F. H.....	Ithaca, N. Y.
Peer, F. S.....	Mt. Morris, N. Y.
Pervis, Robt.....	Cortland, N. Y.
Powell, E. A.....	Syracuse, N. Y.
Powell, Geo. T.....	Ghent, N. Y.
Perrin, Walter R.....	Gouverneur, N. Y.
Preston, E. J.....	Amenia, N. Y.
Peck, W. H.....	Syracuse, N. Y.
Polly, Lafayette	Burr's Mills, N. Y.
Petrie, S. W.....	Buffalo, N. Y.
Piffard, H. G.....	256 W. 57th St., New York. N. Y.
Peck, B. M.....	Phillips Creek, N. Y.
Peckham, V. E.....	Jamestown, N. Y.
Peck, Leon L.....	South Canisteo, N. Y.
Pearson, R. A.....	Albany, N. Y.
Paddock, Ruth	Malone, N. Y.

R

Ress, H. A.....	Lowville, N. Y.
Robinson, Sidney	Malone, N. Y.
Runyon, H. J.....	New York, N. Y.
Richardson, H. W.....	East Aurora, N. Y.
Richardson, S. B.....	Lowville, N. Y.
Riggs, H. W.....	Albany, N. Y.
Royce, C. H.....	Ithaca, R. D., N. Y.
Roby, Dr. Joseph.....	Rochester, N. Y.
Rutherford, T. F.....	Madrid, N. Y.
Russell, C. T.....	Munnsville, N. Y.
Royce, G. G.....	Gouverneur, N. Y.
Roger, S. R.....	Sidney Center, N. Y.
Ryder, Frank H.....	Cobleskill, N. Y.
Rowley, E. F.....	Kennedy, N. Y.
Rogers, W. A.....	Watertown, N. Y.
Reed, J. W.....	Gouverneur, R. D., N. Y.
Risley, J. M.....	Rhinecliff, N. Y.
Rockwell, B. C.....	Westville Center, N. Y.
Ross, M. E.....	Avon, N. Y.
Reynolds, Thos.	Belmont Center, N. Y.
Rowley, C. Lynn.....	Kennedy, N. Y.
Rosemary Creamery Co.....	Adams, N. Y.

S

Sanger, W. C.....	Sangerfield, N. Y.
Santee, E. M.....	Cortland, N. Y.
Sackett, C. E.....	Utica, N. Y.
Sears, Frank	Cortland, N. Y.
Schimmel, Albert	Maspeth, N. Y. City, N. Y.
Schooley, V. W.....	Warwick, N. Y.
Seoville, J. V. H.....	New Hartford, N. Y.
Seymour, Jas. H.....	New York, N. Y.
Sisson, G. W., Jr.....	Potsdam, N. Y.
Shattuck, J. W.....	Norwich, N. Y.
Shaw, Frank E.....	Dunkirk, N. Y.
Sherman, Ira E.....	Sidney, N. Y.
Smith, Jasper	Binghamton, N. Y.
Stevens, W.....	West Groton, N. Y.
Smead, C. D.....	Hector, N. Y.
Smith, Geo. A.....	Geneva, N. Y.
Still, C. B.....	Theresa, N. Y.
Sibley, F. L.....	Cuba, N. Y.
Sholes, C. E.....	Oswego, N. Y.
Stevens, Henry	Lacona, N. Y.
Seaman, Elizabeth C.....	2-6 Cliff Street, New York, N. Y.
Schlappi, J. F.....	Constableville, N. Y.
Stern, Louis	W. 23d St., New York, N. Y.
Smith, H. L.....	Norwich, N. Y.
Skaneateles Creamery Co.....	Skaneateles, N. Y.
Sanford, R. J.....	Potsdam, N. Y.
Smith, J. L.....	Warsaw, N. Y.
Steward, Guy	Stamford, N. Y.
Smith, Geo. A.....	Constableville, N. Y.
Shields, T. J.....	Malone, N. Y.
Santimone, J. D.....	Malone, N. Y.
Shaver, S. C.....	Syracuse, N. Y.
Spink, L. D.....	Attica, N. Y.
Smith, Jno. A.....	Oak Hill, N. Y.
Sturges, Russell	New York, N. Y.
Smith, Oliver & Son.....	Chateaugay, N. Y.

T

Tabor Pump Co.....	Buffalo, N. Y.
Thornton, Amasa	New York, N. Y.
Thatcher, Mfg. Co.....	Elmira, N. Y.
Troy, H. C.....	Ithaca, N. Y.
Trout, A. K.....	P. O. Box 438, Syracuse, N. Y.
Truax, Melville	Pope Mills, N. Y.
Truesdelle, E. H.....	Watertown, N. Y.
Tieknor, A. N.....	Penelope, N. Y.
Tiquin, Thos. E.....	Sherburne, N. Y.

U

Urner, F. G.....173 Chambers St., New York. N. Y.

V

Van Slyke, Dr. L. L.....Geneva, N. Y.
 Van Wagenen, Jared, Jr.....Lawyersville, N. Y.
 Voorhees, W. H.....Mill Paint, N. Y.
 Van Alstyne, EdwardKinderhook, N. Y.

W

Walker, C. R.....Richville, N. Y.
 Wager, Irving A.....North Brookfield, N. Y.
 Warsaw Salt Co.....Warsaw, N. Y.
 Ward, Gilbert E.....Ravena, N. Y.
 Wells, Geo. N.....Elmira, N. Y.
 Wheeler, G. D.....Deposit, N. Y.
 Wheeler, Chas. A.....Deposit, N. Y.
 Willey, E. B.....Binghamton, N. Y.
 Wickham, Chas. W.....Mattituck, N. Y.
 Wilcox, M. S.....Jefferson, N. Y.
 Wilson, Dr. Claude.....Watertown, N. Y.
 Wing, H. H.....Ithaca, N. Y.
 Witter, D. P.....Berkshire, N. Y.
 Winters, HarryAlbany, N. Y.
 Widmer, O. R.....Wappingers Falls, N. Y.
 Wood, Geo.Woodville, N. Y.
 Wood, Jas.....Mt. Kisco, N. Y.
 Woodard, J. S.....Lockport, N. Y.
 Woodward, O. M.....Rodman, N. Y.
 Woodworth, C. E.....Southwest Oswego, N. Y.
 Wickwire, C. H.....Cortland, N. Y.
 Whitney, W. B.....Sherman, N. Y.
 Woodruff, T. L.....Brooklyn, N. Y.
 Weber, A. M.....Springville, N. Y.
 Wakefield, C. B.....Falconer, N. Y.
 White, P. E.....Denmark, N. Y.
 Waterman, C. H.....Avon, N. Y.
 Ware, T. M.....Meridale, N. Y.
 Wright, C. B.....Lisbon, N. Y.
 Wentworth, FaySun, N. Y.
 Wightman, I. C.....Norwich, N. Y.
 Wood, R. H.....Little Falls, N. Y.

Y

Young, W. I.....New York, N. Y.
 Youngs, J. W.....Oxford Depot, N. Y.
 Young, W. G.....Fillmore, N. Y.
 Young, B. J.....Hobart, N. Y.

LIFE MEMBERS WHO RESIDE OUT OF THE STATE

Adams, Cushing	Bellows Falls, Vt.
Anderson, Leroy	Berkeley, Cal.
Bennett, A. A.	St. Charles, Ill.
Dewey Brothers	Blanchester, Ohio
Edmunds, F. W.	Greeley, Neb.
Gill, Bion	
Kelsey, J. W.	Philadelphia, Pa.
Knight, C. C.	154 Lake St., Chicago, Ill.
Monrad, J. H.	Nearum, Denmark
New Way Motor Co.	Lausing, Mich.
Roberts, I. P.	Palo Alto, Cal.
Richardson, E. A.	Burlington, Vt.
Smith, Wm. E.	Plainfield, N. J.
Ward, A. R.	Berkeley, Cal.
White, W. I.	Boston, Mass.
Wilbur, D. F.	Am. Consul, Kobe, Japan.
Woodworth, E. B.	Chicago, Ill.

PAST PRESIDENTS OF THE ASSOCIATION AND YEARS OF THEIR SERVICE

*Harris Lewis	1877-1886
J. S. Shattuck	1887-1888
I. P. Roberts	1889
*W. H. Gilbert	1890
*Josiah Shull	1891
*Jesse Owens	1892
Frank Blanding	1893
E. S. Munson	1894
A. D. Baker	1895
*A. Chas. Thompson	1896
L. L. Van Slyke	1897
A. R. Eastman	1898
S. B. Richardson	1899
G. A. Smith	1900-1901
D. P. Witter	1902
H. E. Cook	1903
G. A. Smith	1904
V. C. Beebe	1905
*M. T. Morgan	1906
*W. W. Hall	1907
W. H. Jordan	1908
H. H. Wing	1909
J. D. Frederiksen	1910
I. L. Hunt	1911
E. H. Dollar	1912

ANNUAL MEMBERS

A

Ahlheimer, Geo.....	26 W. Market St., Buffalo, N. Y.
Adams, D. G.....	c/o Practical Dairyman, Syracuse, N. Y.
Alger, A. P.....	Unadilla, N. Y.
Ayres, W. E.....	Berne, N. Y.
Ayres, H. L.....	Ithaca, N. Y.

B

Brooks, D. H. T.....	124 W. Brighton, Syracuse, N. Y.
Beerton, Haydon W.....	Ira, N. Y.
Blanchard, Mr.....	Ithaca, N. Y.
Brame, S. G.....	120 W. Jefferson St., Syracuse, N. Y.
Bolster, F. J.....	Binghamton, N. Y.
Bonney, A.....	c/o Dr. North Milk Exchange, New York, N. Y.
Brigham, C. H....	c/o De Laval Separator Co., 165 Broadway, New York, N. Y.
Bond, Fred.....	Meadville, Pa.
Brown, Marvin.....	Cuba, N. Y.
Brooks, I. W.....	Unadilla, N. Y.
Bennett, R. S.....	Cortland, N. Y.
Brown, H. J.....	Georgetown, N. Y.
Brehm, John C.....	Antwerp, N. Y.
Brown, A. C.....	Batavia, N. Y.
Barry, R. A.....	175 Chambers St., New York, N. Y.
Bouck, E. T.....	Jasper, N. Y.
Bull, Daniel.....	510 W. Onondaga St., Syracuse, N. Y.
Beanpre, Arthur.....	W. Amboy, N. Y.
Brown, E. D.....	Hammond, N. Y.
Barnes, Sam....	c/o De Leval Separator Co., 165 Broadway, New York, N. Y.
Bean, O. H.....	Knoxville, Pa.
Bolton, F. J.....	Gouverneur, N. Y.
Beebe, B. S.....	Ellisburg, N. Y.
Bernstein, S.....	Lacona, N. Y.
Burton, Wm.....	Schoharie, N. Y.
Buell, C. E.....	Herkimer, N. Y.
Benley, Chas.....	W. Laurens, N. Y.
Bundy, Howard.....	Meridale, N. Y.
Brown, G. A.....	c/o National Chemical Co., Syracuse, N. Y.
Braydon, S.....	c/o Gillis Stock Farm, Syracuse, N. Y.
Burrell, L.....	Little Falls, N. Y.
Breete, Paul C.....	R. F. D. 1, Roscoe, N. Y.
Brown, B. H.....	Caledonia, N. Y.
Bailey, N. W.....	Fair Haven, Vt.

C

Collins, W. W.....	Omar, Jefferson Co., N. Y.
Cowell, E. E.....	Jordan, N. Y.
Conklin, Earl S.....	Berne, N. Y.
Chapman, M.....	Canastota, N. Y.

Chapman, I. J.....	Canastota, N. Y.
Carver, J. L.....	Verona, N. Y.
Casey, W.....	Potsdam, N. Y.
Corcoran, M.....	165 Broadway, New York City, N. Y.
Chickner, R. T.....	Watertown, N. Y.
Chapman, Edwin H.....	1 Madison ave., New York City, N. Y.
Carpenter, W. F.....	Gouverneur, N. Y.
Cross, R. E.....	Ithaca, N. Y.
Coffin, Lewis.....	Avoca, N. Y.
Chaplin, A. S.....	Wolcott, N. Y.
Carpenter, W. E.....	LeRoy, N. Y.
Coddington, J. D.....	129 W. Water St., Elmira, N. Y.
Coons, J. I.....	Meridale, N. Y.
Coddington, A. C.....	Ausbury House, Rochester, N. Y.
Collson, Anthony.....	Elmira, N. Y.
Chadwick, H. K.....	c/o Syracuse Cold Storage Co., Syracuse, N. Y.
Croton, H. C.....	Homer, N. Y.
Cover, C. D.....	Box 84, Rochester, N. Y.
Coyle, H. J.....	c/o Rochester Ice Cream Co., Rochester, N. Y.
Crawford, J. B.....	c/o Dairymen's Supply Co., Lansdowne, Pa.
Craft, F. F.....	37 and 39 Liberty St., New York City, N. Y.

D

Deers, C. F.....	Elmira, N. Y.
Diekey, C. K.....	98 Columbia St., Albany, N. Y.
Dollar, E. H.....	Heuvelton, N. Y.
Deroly, H. W.....	Sidney Center, N. Y.
Dailey, R. E.....	Gouverneur, N. Y.
Davis, Hugh.....	Broadalbin, N. Y.
Daig, W. C.....	95 North St., Walton, N. Y.
Day, Chancellor.....	Syracuse University, Syracuse, N. Y.
Drury & Hyde.....	N. Bangor, N. Y.
Duffy, C. B.....	7 Chesnut St., Potsdam, N. Y.
Dutton, C.....	S. Otselic, N. Y.
Dorsey, B. J.....	Leon, N. Y.
Dennis, R. W.....	Jasper, N. Y.
Duffy, Henry.....	La Fargeville, N. Y.
Dunn, M. G.....	11 Washington St., Albany, N. Y.
Dey, Chas. B.....	Skaneateles, N. Y.
Driscoll, Geo.,.....	State Fair Com., office, Syracuse, N. Y.
Dennis, S. F.....	Syracuse Ice Cream Co., Syracuse, N. Y.
Dealy, J. H. A.....	221 N. Delaware ave., Philadelphia, Pa.
Dice, J. R.....	Morrisville, N. Y.

E

Ewart, F. A.....	Belleville, N. Y.
Elwell, H.....	220 Mary St., Utica, N. Y.
Elwood, H. C.....	800 D. S. Morgan Building, Buffalo, N. Y.
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Edwards, J. D.	Dept. Agriculture, Albany, N. Y.
Eagan, T.	Henrietta, N. Y.
Ellison, John	Binghamton, N. Y.

F

Fitch, E. A.	322 S. Salina St., Syracuse, N. Y.
Fitch, F. H.	Hammond, N. Y.
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G

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Gettman, Lewis	Redwood, N. Y.
Gibby, J. L.	Arcade, N. Y.
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Gowing, G. H.	145 Walton St., Syracuse, N. Y.

H

Hall, S. A.	Watertown, N. Y.
Hyman, Chas.	Newark, N. Y.
Hannett, Geo. E.	401 City Hall, Syracuse, N. Y.
Herbert, Mr.	Unadilla, N. Y.
Hunt, E. G.	Rutland, Vt.
Hutchings, C. W.	Cuba, N. Y.
Huson, Ross	Dresden, N. Y.
Houge, Earl	Hinsdale, N. Y.
Horan, D. S.	3 Dale Place, Little Falls, N. Y.
Hoag, Frank P.	Laurens, N. Y.
Hargrave, A. B.	Heuvelton, N. Y.

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Hannalis, J., M.....	Canton, N. Y.
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Hutchens, E. A.....	4 Livingston Ave., Binghamton, N. Y.
Hern, J. F.....	White Plains, N. Y.
Houghton, Merritt.....	Camden, N. Y.
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Hayes, Fred J.....	Potsdam, N. Y.
Harwood, F. H.....	Cedar Rapids, Ia.
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Hull, H. N.....	Merrell-Soule Co., Syracuse, N. Y.
Hawkins, E. T.....	302 Summit Ave., Syracuse, N. Y.
Hedges, H. F.....	East Hampton, L. I., N. Y.
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Howard, B.....	Jay, N. Y.
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Hawes, C. W.....	Hannibal, N. Y.

I

Isbell, L.....	R. F. D. 2, Oswego, N. Y.
----------------	---------------------------

J

Ingersoll, E. M.....	Lacona, N. Y.
Jennings, I. G.....	68 Broad St., New York, N. Y.
Jones, H. E.....	Syracuse Cold Storage Co., Syracuse, N. Y.
Jones, Thos.....	Marcellus, N. Y.
Johnson, L. C.....	Schenectady, N. Y.
Jones, W. H.....	Syracuse, N. Y.

K

Kendall, I. H.....	Potsdam, N. Y.
Kirkland, R. R.....	Philadelphia, N. Y.
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Knox, H. M.....	Canton, N. Y.
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L

Lawrence, F. A.....	Vernon, N. Y.
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Long, E. L.....	c/o Armstrong Cork Co., Rochester, N. Y.
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Larson, H. W.....	Washington, D. C.
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LeMeasure, A.....	Syracuse Ice Cream Co., Syracuse N. Y.
Lenz, W. H.....	Gloversville, N. Y.
Lea, M. A.....	200 May Ave., Syracuse, N. Y.

M

Murphy, W. J.....	R. F. D. 1, Ogdensburg, N. Y.
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McClain, G. H.....	New Athens, Ill.
Merry, Dr. A. E.....	Syracuse, N. Y.
Martin, Prof. S. A.....	Syracuse University, Syracuse, N. Y.
Meehan, Dr. James H.....	c/o Dept. Agriculture, Albany, N. Y.
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Murphy, Barry.....	Medina, N. Y.
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Munsell, A. W.....	Attica, N. Y.
McDonald, A. P.....	Toronto, Ont.
Moore, W. F.....	Dryden, N. Y.
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Merrill, G. L.....	Albion, N. Y.
McCoy, R. H.....	524 Forest Ave., Avalon, Pa.
Miller, Levi.....	Morrisville, N. Y.

N

Nadler, D.....	Amsterdam, N. Y.
Nadla, J.....	Amsterdam, N. Y.
Nelson, H. F.....	R. F. D. 7, Cortland, N. Y.
North, Dr. C. E.....	30 Church St., New York, N. Y.
Nehrboss, Fred J.....	Crittenden, N. Y.
Nivling, S. T.....	c/o Rochester Ice Cream Co., Rochester, N. Y.

O

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P

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Philpot, H. J.....	Canton, N. Y.
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Parslow, John M.....	Syracuse Ice Cream Co., Syracuse, N. Y.
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Porteous, J. P.....	Canton, N. Y.

Q

Quackenbush, R. W.....	Grand Central Terminal, New York, N. Y.
Quick & Thomas.....	Auburn, N. Y.

R

Rutherford R. G.....	Hammond, N. Y.
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Rowe, J. B.....	Vernon, N. Y.
Ruttenber, A. J.....	800 Morgan Building, Buffalo, N. Y.
Richardson, S. B.....	Lowville, N. Y.
Poole, E. E.....	Alfred, N. Y.
Roberts, G. S.....	Copenhagen, N. Y.
Ross, O. F.....	Lowville, N. Y.
Hamseyer, P. F.....	West Walworth, N. Y.
Redfield, F. B.....	Adams, N. Y.
Richardson, W. N.....	Delevan, N. Y.
Robinson, V. D.....	Edmeston, N. Y.
Rogers, W. A.....	414 Dillaye Building, Syracuse, N. Y.
Rees, A. J.....	Lowville, N. Y.
Lumley, E. M.....	Gouverneur, N. Y.

S

Sharpless Separator Co.....	West Chester, Pa.
Sharpless, P. I.....	West Chester, Pa.
Spiehler, O. B.....	Big Elm Dairy Co., Rochester, N. Y.
Stone, G. T.....	Norwich, N. Y.
Sharp, Ira.....	Lowville, N. Y.
Stalzer, J.....	148 Linden St., Syracuse, N. Y.
Sweetland, H. S.....	So. Dayton, N. Y.
Sturgis, R.....	Sea Cliff, L. I., N. Y.
Stacy Cheese Co.....	Little Falls, N. Y.
Stewart, S. L.....	Brookside Farm, Newburg, N. Y.
Prague, W. S.....	Ira Station, N. Y.
Sexton, H.....	Boonville, N. Y.

Stone, T. L.....	Craig Colony, Sonyea, N. Y.
Stoddard, R.....	165 Broadway, New York, N. Y.
Sessions, Fred.....	Washington Mills, N. Y.
Sellew, R. P.....	7 Merchants Row, Boston, Mass.
Spink, L. D.....	Attica, N. Y.
Stoddard, J. H.....	Syracuse, N. Y.
Sexton, H. R.....	Sherburne, N. Y.
Smith, W. J.....	322 Broadway, Albany, N. Y.
Smith, Chas. E.....	W. Valley, N. Y.
Smith, G. A.....	Geneva, N. Y.
Smith, H. S.....	129 Lynn St., Ithaca, N. Y.
Smith, H. N.....	Syracuse, N. Y.
Shaver, S. C.....	Syracuse, N. Y.
Smith, R.....	Brasher Falls, N. Y.
Smith, T. G.....	Gurney Building, Syracuse, N. Y.
Sheldon, R. E.....	Weedsport, N. Y.
Stilson, Geo.....	Cortland, N. Y.
Sones, L. N.....	Empire Separator Co., Bloomfield, N. J.
Sage, E. A.	New Berlin, N. Y.
Smith, Chas. M. A.....	109 Chaffee Ave., Syracuse, N. Y.
Steen, J. H.....	Kyserike, N. Y.
Sharpley, W. A.....	Hamilton, N. Y.
Scott, E. C.....	510 Clarendon St., Syracuse, N. Y.
Smith, Wing R.....	38 Weiting Block, Syracuse, N. Y.
Sisson, Geo. W., Jr.....	Potsdam, N. Y.
Salisbury, B.....	Pulaski, N. Y.
Sutton, E. C.....	Wheat's Ice Cream Co., Buffalo, N. Y.
Snyder, A. C.....	Sharon Springs, N. Y.

T

Turnbull, J. G.....	Orleans, Vt.
Toby, G. W.....	1106 N. Tioga St., Ithaca, N. Y.
Tenment, A. H.....	Caledonia, N. Y.
Tiquin, Thos. E.....	Sherburne, N. Y.
Trout, A. K.....	P. O. Box 438, Syracuse, N. Y.
Tucker, W. E.....	Newfield, Tompkins Co., N. Y.
Taylor, P. E.....	105 East 22d St., New York, N. Y.
Terlune, W. E.....	165 Broadway, New York, N. Y.
Thomas, C. E.....	Waterloo, N. Y.
Throckmorton, W.....	P. O. Box 253, Burlington, Vt.

V

Vorhees, S. G.....	R. F. D. 3, Amsterdam, N. Y.
Vales, F. E.....	68 State St., Albany, N. Y.
Vanderwort, E. A.....	Sidney, N. Y.
Van Dusen, W. H.....	136 and 138 N. Salina St., Syracuse, N. Y.
Van Horne M.....	North Bay, N. Y.
Van Pelt, H.....	Waterloo, Ia.
Ward, K.....	110 Wood Ave., Syracuse, N. Y.
Van Antwerp, Guy.....	Port Byron, N. Y.

W

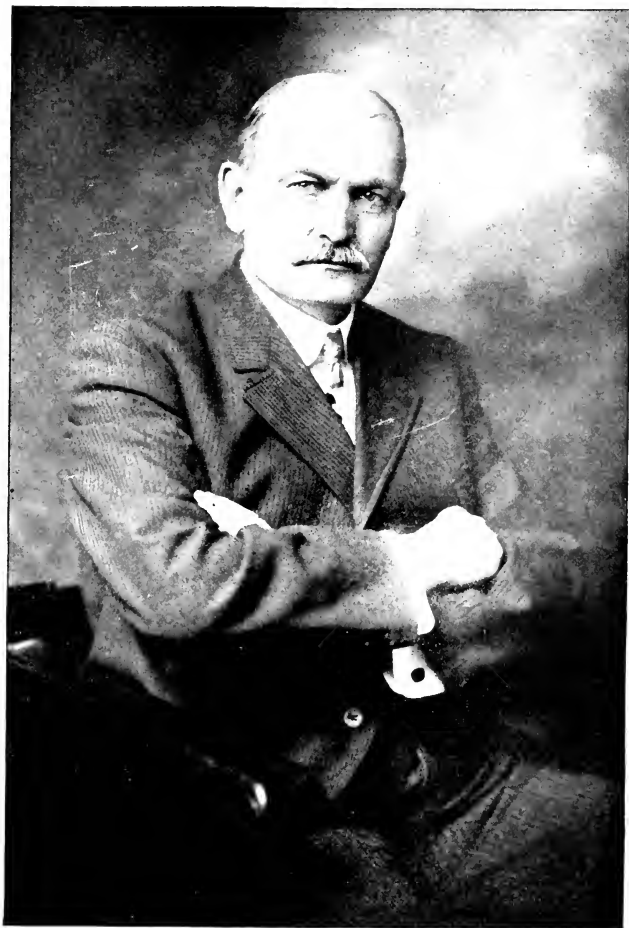
Williams, E. C.....	Richmond Hill, N. Y.
Whitney, A. D.....	Madrid, N. Y.
Walker, B. R.....	Warren, Pa.
Whitcher, C. E.....	313 Keyes St., Watertown, N. Y.
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Westcott, Geo.....	Etna, N. Y.
Whiting, G.....	Gurney Building, Syracuse, N. Y.
Wood, R. H.....	Little Falls, N. Y.
White, W. B.....	Ithaca, N. Y.
Weatherup, T. W.....	Rensselaer Falls, N. Y.
Wylie, J. H.....	231 Colchester, Wellington, Vt.
Wood, A. E.....	Big Elm Dairy Co., Rochester, N. Y.
Wills, J. G.....	Dept. Agriculture, Albany, N. Y.
Wilmont, W. D.....	Delevan, N. Y.
Winters, Harry B.....	Albany, N. Y.
Wise, J.....	R. F. D. 3, Fulton, N. Y.

Y

Young, J. L.....	Madrid, N. Y.
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Z

Zimmer, Dr. L. L.....	Chemung Valley Farms, Elmira, N. Y.
Zoller Cheese Co.....	Little Falls, N. Y.



CALVIN J. HUSON.

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APRIL, 1913

Bulletin 46

Proceedings of the New York State Breeders' Association

1913

ALBANY
J. B. LYON COMPANY, PRINTERS
1913

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FIRST SESSION

WEDNESDAY MORNING, JANUARY 22

Meeting called to order at 10 A. M., President Huson in the chair.

In presenting Honorable F. J. Baker, Mayor of Utica, the President said:

“When this program was prepared it was doubtful whether we ought to hold a morning session, but as we have attempted to crowd a great deal in a session lasting two days it was deemed advisable to start our proceedings this morning, and I am very glad indeed to see so many familiar faces of those who can always be depended upon to attend the first session of this association at whatever hour it may be held. I am also pleased to see some others present here this morning.

“I have the honor of now presenting to you His Honor, Mayor Baker, of this good city, who will address you.”

ADDRESS OF WELCOME

F. J. BAKER, MAYOR OF UTICA

Mr. Huson, Chairman and Gentlemen: If I were to arise and say, in a somewhat perfunctory way, “welcome to our city,” you might take it that the invitation was indeed perfunctory and did not carry with it any appreciation of the effort that many of you must have made to attend this convention. Not being a breeder myself, possibly I am not in a position to extend to you the right hand of fellowship in the way that you might most desire. However, I know a little something of the objects of your state organization, and in extending the welcome of Utica to you at this time I want to say that I hope that the results of this convention will be such that each one of you will go home with some new thought which intimately concerns the object for which you gathered here.

For many years the breeding of stock, of whatever name or nature, has been referred to as an art. I take it that it is advancing so fast that it more nearly approaches a science, and some of the things that you first based your conclusions upon are now

only of historical value, because results change from time to time so quickly that you have very little upon which to go forward with your investigations. If I were to start to tell you of the reversed species, if I should try to tell you something about the maternal influences, or if I should attempt to say something of the availability of your crossing of stock for special purposes, I would indeed be in deep water. However, it occurs to me from what little I know of the processes of your conclusions, and results of them, that this variability, which I know some of you and most of you have discussed, one with another, is indeed the only refuge of a breeder. It occurs to me that if the rule was that like begets like continually, with no deterioration, that there was no variability, where would your hope of selection be?

It strikes me that if the results of this convention will lead you to some conclusion along some special line, that you will have indeed done something that will make you feel that it was worth while coming to Utica. I trust the result of your labors will be such as to give you renewed confidence, that you may press on towards the goal you have set, and I trust you will feel that Utica was the place from which you made the new start, and I welcome you very sincerely to this city.

I thank you, gentlemen.

RESPONSE TO ADDRESS OF WELCOME

CALVIN J. HUSON

We all recall, when this association met in Utica three years ago, the courtesies which we received at the hands of the city authorities, and that the people generally of this city were so kindly remembered by all of us that we were glad to return to Utica for our annual meeting at the first opportunity. And if we cannot have a successful meeting here this year amid these beautiful surroundings and in this hospitable atmosphere, it would seem that we could not have a successful meeting anywhere. It seems to me there never was a time when those of us who are banded together for the promotion of the animal husbandry interests of the state should consider so well and intelligently the great problems that confront us here as at the present time. And although Mayor Baker disclaims any special knowl-

edge of these subjects of breeding that bring us together and which we are here to consider, I think you will all agree that, from his eloquent address, he discloses the fact that he is quite familiar with those great underlying principles that we are here to consider, and that he knows more about them than he is willing to admit.

At this initial session of the association I desire to call your attention to some facts in regard to the situation of the animal husbandry interests in the State of New York, so that when we come to take up these questions from session to session we will be in a better position to realize just what the condition of that industry is to-day in the great State of New York, as compared with what it has been at various periods in the past.

The federal census tells that in the year 1890 there were 1,440,000 dairy cows in the State of New York. In the year 1900 that number had increased to 1,501,000, an increase, during the ten years, of only 61,000. In 1910, the last authentic figures we have on the subject, there appeared to be 1,509,000 dairy cows, an increase, during the period of ten years, of only 8,000, or less than 1,000 per year. When we turn to the value of these animals, however, we get a different result. The federal census does not disclose the value of the dairy animals in the year 1890, but in the year 1900 we learn that the value of all the dairy cows in the state was \$48,000,000, and in 1910, \$69,000,000, an increase within the ten years of \$21,000,000 in value, although there was an increase of only 8,000 in number.

In that connection I desire to call your attention to another fact in which there is a warning, that during the year 1910 young calves were sold to the extent of 1,027,000. From a million and a half dairy cows more than a million veal calves were sold in the year 1910. If that is to continue, from what source is the future dairy cow to come?

Turning to the swine industry in the State of New York, we find that in 1890 there were 843,000 pigs, old and young. In 1900 there were only 678,000 of all ages, a decrease during the ten years of 165,000. In 1910, ten years later, there were 666,000, a further decrease of 12,000 in the ten-year period. The value, however, in 1900, appears to have been \$3,800,000,

and the value in 1910, \$5,900,000. Although there was a decrease of 12,000 in the total number, there was an increase in their value of \$2,100,000.

In 1900 there appears to have been 1,745,000 sheep in the State of New York. In 1910 that number had dwindled down to 930,000, a decrease in the ten years of 815,000. In 1900 these 1,745,000 sheep were valued at \$5,920,000, while in 1910 the 930,000 were valued at \$4,839,000, a decrease of only \$1,081,000 in value, although there was a decrease of 815,000 in numbers.

When we come to the horse the figures are even less attractive to us. In 1890 there were 664,000 horses in the State of New York. In 1900, ten years later, there were 628,000, a decrease in the ten years of 36,000. In 1910 there appears to be only 591,000, a still further decrease in that ten-year period of 37,000. In 1900 the total value is given as \$48,000,000; in 1910 the value is stated to be \$80,000,000; and although the number had decreased 37,000 in the ten years, the value had increased \$32,000,000.

In 1900 there were in the State of New York, in round numbers, 50,000 colts under two years of age—the foals of two years. In 1910 there were 28,000 colts under two years of age, a decrease in the ten years of 22,000.

From these figures we get this result: There are 7 dairy cows to each farm in the State of New York, 3 pigs, 4 sheep, and $2\frac{1}{2}$ horses, of all ages, including colts. There is only one colt under 2 years of age to each 10 farms in the State of New York.

I state these figures for your information, although they are facts that are within the general knowledge of all of us, so that we may have them fresh in our minds when we come to consider the various topics that are on the program for discussion. There is no branch of agriculture in the State of New York, in my judgment, that has been so generally neglected as animal husbandry. We all feel that if we are to have a permanently prosperous agriculture in the State of New York, it must be founded, to a considerable extent at least, upon animal husbandry. If we are to turn over our agricultural lands to those who are to follow after us, with their fertility and

productiveness unimpaired, it seems to me we must give greater attention to the breeding of domestic animals. There is no means known to modern scientific agriculture by which our depleted soils can be more quickly restored, or by which the productiveness and fertility of our agricultural lands can be maintained, than by the old-fashioned method of animal husbandry. And at this time more than at any other, at least for many years, animal husbandry presents a very attractive business proposition. The City of New York consumes more than two million quarts of milk every day in the year, to say nothing of the other great cities, towns and villages all over the state. We are sending out of the state every year a very considerable number of our best dairy cows; that fact has been brought to my personal attention in this way, because they have to be subjected to the tuberculin test before they can be shipped out of the state, and during the three or four months just past we have passed tests of more than 12,000 of the best dairy cows in the State of New York that have gone out of the state. And we are breeding but comparatively few dairy animals to take their place.

The great number of veal calves that are thrown upon the market indicates that we are sending them to the market at this tender age rather than rear them for the future dairy cow. I know the temptation is great in view of the high price paid for veal, but it is not for the immediate present alone that we should approach this subject; we must have some regard for the future, and the future of this great industry. The dairy interest, as you know, is the largest single agricultural interest in the State of New York. We are now producing a hundred million dollars a year in dairy products. We stand first of all the states in the value and the quality of our dairy products. The demand for these products is without limit. Our markets are the best in the world; and while we may have troublesome market conditions and problems to solve, that is no reason why we should not plan for the future and meet the future demand for dairy products in the State of New York.

So it is with each branch of animal husbandry. We are buying our horses for use on the farm. Some of you may feel that we

have given the horse undue prominence on the program. The situation of the horse-breeding industry in the State of New York is such as to indulge the hope that you will deem it wise on our part that we have given this subject so much prominence; for whatever encourages the breeding of horses, whatever will tend to stimulate that industry, will also tend to stimulate and encourage the breeding of every other domestic animal upon the farm. As near as the facts can be ascertained (and it is well within the truth) the farmers, truckmen and draymen of the State of New York purchase annually more than 80,000 horses. To come well within the figures, if those horses cost \$200 each (which is a low estimate) it means that we are paying \$16,000,000 a year for the horses that we are using on our farms. It is a tremendous drain upon us, and we are so situated, I believe, that we can profitably raise horses much cheaper than we can buy them. If we are to pursue agriculture on the same general plan that we are now following, we are of necessity going to be obliged to raise more of the horses necessary for our farming operations. The supply from the West is going to decrease. The time is rapidly coming, and is practically here, when the western states from which the great supply of horse-flesh has come are producing no more animals than are necessary for their own farming operations, and the very high price which we are required to pay for our farm horses at this time is proof of the fact that their scarcity has brought the price up to an abnormal figure.

Now what I state in regard to the dairy cow, and in regard to the horse, applies with equal force to the sheep and the pig. The farmers of the State of New York are not producing enough pork to supply our people for a single month. There is no reason, it seems to me, why we should not produce a much greater proportion of the pork and the pork products that our own people consume. This state will never be a great pork-producing state; we are given to other lines of agriculture. But I believe that the pig has a place on every well-regulated farm, and that they should be produced, and can be profitably produced as a side line in greatly increased numbers on practically every farm of the state. Take the figures in regard to our sheep

industry. If we are to draw conclusions simply from them, they are most discouraging. In the period of ten years the number of sheep in the State of New York decreased practically one-half; the decrease in that period was something over 800,000. Yet we are producing the best sheep that are being produced in the market to-day; we have some of the most progressive breeders in all this country, producing the highest type of animal, right here in the State of New York. We have thousands and thousands of acres of land, steep hillsides and rough lands, where men are dragging out their lives attempting to produce cultivated crops, that it seems to me could be more profitably devoted to the sheep and pasturage for other animals, where less energy would be needed and, with a little intelligence, much greater profit realized. Domestic animals of all kinds are to remain high in price, so far as human foresight can discern, certainly for the immediate years of the future; and if the people of the State of New York do not embrace the opportunity that is afforded them to engage more generally in animal husbandry, they are missing a great opportunity to promote their own interests and the general agricultural interests of the state. If that interest is to be promoted and stimulated, there is no body of men better qualified to devise ways and means, better qualified to lead the way, than this faithful band of intelligent breeders, who, for years, organized under the title of the New York State Breeders' Association, have been faithful and loyal to our waning animal husbandry interests; and there is so much in the future to encourage all of us, that I am glad to see that we meet here to-day with fresh hope for the future of the industry in which we believe, and which should have a permanent place on every well-regulated farm in the State of New York.

I referred to the fact that we have given a great deal of attention on the program to the horse industry, and I hope you will agree with us who are responsible for this program that this industry is of prime importance in this state. A short time ago I had occasion to make an examination in the county clerks' offices of the state for the purpose of getting the number and the kind of stallions that were registered for public service. Fifteen or sixteen counties were selected as furnishing

a fair average of the whole state. And the result of that examination is a very surprising one. I do not believe there is one stallion out of ten in the State of New York that is entitled to reproduce himself. There are a considerable number of these animals standing at as low a service fee as \$3, and they are the ones, more than the better ones, that seem to be perpetuating themselves. There is not one stallion in ten, in the counties where we have examined these records, that is either a thoroughbred, a standard bred or a pure bred, of any breed. The great majority of them are grades, and a large number of them not even that — they are the offspring of grade sires. Perhaps that has something to do with the condition of the horse-breeding industry in the State of New York. Perhaps we have not been breeding the right type of horse. Perhaps we have not been breeding a good enough horse, not only for the market but for our own use. And I think if we are to stimulate the horse-breeding industry of the state we will have to get down to the foundation of it, and to start right and to have a better insight into the type of horse that we ought to breed, and the market demands. That involves a discussion of the question of the elimination of those mongrel and grade stallions that are unworthy individuals, from our breeding operations. I doubt very much whether the state should undertake to say that a stallion that is now used for public service can no longer be used, but I do believe that it would impose no hardship upon anyone to say that, from a certain time in the future, no animal of that type that was unfit to perpetuate itself should be registered for public service. That would apply to the generation of horses yet unborn, and would produce a gradual elimination of those that are now tending to retard our breeding operations. It might be wise to go still further than that; but I suggest that as a general proposition which would do no wrong to any man, nor interfere with what he may deem his vested right in any animal that exists to-day. And so with the passage of the present generation of these worthless stallions that are doing much harm to our horse-breeding industry, there would come upon the scene a new type of sire that would be a credit to our breeding operations and would encourage us to breed the type of horse that may be

useful on our farms, and find a ready market in the great cities of the state. And so I have asked Dr. Hollingworth of this city, who has given the subject considerable attention, to discuss from his standpoint, some of the needed changes in our stallion registration law. And it gives me great pleasure at this time to present to you Dr. W. G. Hollingworth, of Utica.

DR. HOLLINGWORTH: To say that the condition of horses in this state is becoming very acute is a fact. And I see no reason why, as the Commissioner stated, we cannot go to work and change the type. We know, from the conditions as they exist at the present time, that we are going rapidly behind as far as number goes; and as the Commissioner has given you a number of statistics in regard to this, which are naturally facts, if I read some of those same conditions it would only show that we have both gone over the same statistics.

To show what horse-breeding will do in this state or any other state, you take, for instance, New Jersey and Pennsylvania, which have improved stallion laws. What have they done? At the International Live Stock Association Show, held last year in Chicago, they won all the prizes; they took the sweepstakes in everything, from the stallions and mares and also from their get, so that shows you what propagation will do in that line.

With these few remarks I will read a paper which has been allotted to me.

SOME NEEDED CHANGES IN THE STALLION REGISTRATION LAW

DR. W. G. HOLLINGWORTH, UTICA, N. Y.

If a pure-blood stallion law could be passed, the breeding from pure-blood sires would be the topic of discussion in every farming community; and this, if nothing else, would be considered a most valuable effect of the new legislation. It would be educational to all those interested in breeding, selling, buying or using the horse.

So long as we are satisfied to run along in the same old rut, little can be accomplished; but when we awake from the slumber and see the importance and need of study, the employment of modern means, and the eradication of our faulty conditions, changes for the better will be forthcoming. Something is needed

to better the farmers' methods in regard to horse-breeding, and that is an improved stallion law. How or what is the way to bring this about? The New York State Veterinary Medical Association has appointed a committee, and it has been suggested that this association with the New York State Horse Breeders' Association select or name a like committee, and the two committees consult with each other in regard to the action necessary to bring this very important matter to a head — the kind of a bill to be introduced, the time advisable to introduce such a measure and the right to get in touch with others not members of the associations named, for suggestions. The idea is to compile a law that is as near right as possible. I believe that while we are under the present administration we would be very likely to meet with success, as we all know the attitude of our President on this subject.

Why is there a scarcity of horses? This is a broad subject to answer. First, is the question of supply and demand. Due to the grade or scrub stallion, farmers all say they cannot get their money back when they want to dispose of the colt. It costs no more to raise a colt from a pure-blood sire than from a scrub or grade sire,— that is the first cost, the service fee. They do not realize that the fee of the pure-blood stallion service enhances the value of the colt. Breeders are at last coming to the conclusion that a pure-blood bull is half the herd; why does not the same follow as to the pure-blood stallion? From lack of thought the horse-breeding industry is carried on very unintelligently, and the results are very unsatisfactory. We have depended too much on the other fellow to supply the demand. Now this individual has failed to meet the expectation. The result is a very high price for the popular work-horse, and no market, as far as revenue is concerned, for the colt of the stallion with no breeding. To this individual is due the undesirable state of affairs in the breeding operations of the state, and this condition has been augmented by the presence of hereditary unsoundness, lack of discrimination in mating and inattention to the adequate feeding and suitable sanitary stabling.

The type of horse required by the mounted police department of our larger cities and the army has, in the last 10 or 15



DR. W. G. HOLLINGWORTH.

years, been fast disappearing, and it has become a very serious condition of affairs. Now if the breeding of this type of horse is not stimulated, it will mean our cavalry and mounted police will have to dismount. One-tenth of the police horses in this state have to be replaced each year, due to accident, sickness and death; likewise the 28,000 horses in our United States army. Horses of the above conformation, etc., will bring a handsome return.

How are we to rectify this condition? First of all, establish a proficient law to regulate stallion service. It, of itself, will be educational; as I have said, a campaign of education. Our agricultural societies should lend more encouragement than they do. Money premiums should be more attractive. They should gradually refuse applications from any but pure-blood stallions, with certificates of registration. Of course there are exceptions to this, in rare cases. It seems to me that considering the amount the state subsidizes for the promotion of agricultural interests, the management should pay strict attention to the promotion of live-stock interests within its domain, especially the horse. It is up to us who are interested along this line to prove to the farmer that it is profitable business to breed his mares to pure-blood stallions. The kind depends on the geographical location, and the offspring will be of some account. The cost of raising a colt to marketable age, according to statistics, is about \$175. This same animal to-day will bring on the open market \$250 to \$300, with plenty of buyers.

Now I feel that New York State should be an exporting instead of an importing state. This not only holds good as far as horses go, but other agricultural products as well. According to the last census our state has 214,650 farms. Of these, 93.6 per cent. or 200,989, reported domestic animals; 86.7 per cent. or 186,164 of which were horses. And during the last decade there has been a decrease of 38,288 in the number of horses. But the value of the horse in 1910, compared with the value in 1900, is \$30,912,000 more, an increase of 66.5 per cent.; this should be encouraging to the horse-breeder, since it shows a steady increase in the face of the automobile as an efficient competitor. The census also shows how few colts are being raised in this

state; only 3,613 spring colts being reported in 1910, which would indicate that only 1.5 per cent. of New York State farmers were interested in horse-breeding.

New York State requires about 80,000 horses annually to meet the demand, which, at an average price of \$200, would amount to \$16,000,000. According to statistics read, the greater proportion of this vast amount leaves this state, and considering our excellent facilities for pasturage and abundance of nitrogenous feed, I see no reason why this should be the case, or why horse-breeding, at the prices horses are bringing now in this state, is not ideal.

I believe if this matter is placed before the legislature in proper form they will consider it seriously; all that is required is a stimulus. And I further believe that with the influence this association and its friends can bring to bear, a stallion law could be enacted, which would enhance horse-breeding in this state. The time has come for the East to look after its own interest. The West requires thousands more horses than former years, due to increased population and agricultural interests, and western farmers are looking after their interests in regard to stock-raising more closely than here at present. We are losing our best brood mares, those more fitted for dams of the work-horse type, they going back to their birth-place to be used for breeding purposes. I think this is a very serious mistake. We should improve conditions so as to make it possible for farmers to breed their mares to stallions of type and soundness. The purchaser very reluctantly pays the price for sound work-horses, and asks the question "Why do not those who are interested try to do something to relieve the situation?" And I thoroughly believe he is right. My slogan is to improve the breeding, as well as to eliminate the sire which may transmit conditions to the progeny that will affect his usefulness and value.

MR. HUSON: We now have a little time to devote to a general discussion of this subject, and I should like to keep the discussion this morning confined, as nearly as we can, to the precise subject of what position the state ought to take in regard to the registration of stallions for public service.

As you all know, any man who has a stallion may file a certifi-

cate with the county clerk of the county in which it is to stand for public service, and the terms of service, and having done this he is in a position to collect the service fee. There is no law, however, to prevent any man keeping a stallion of any type without filing any certificate whatever, and using it wherever he pleases. The only advantage of the registration is that the owner of a stallion registered in the clerk's office, can collect the fee by action at law, and also has a lien upon the colt. Now I know that some of you have very decided convictions as to what the state ought to do, what regulation ought to be made on this subject. And if there is a general expression of opinion on this subject which results finally in some resolution coming from your resolutions committee, when appointed, it may have some weight, at any rate, in solving this subject and influencing the action that may finally be taken.

I think you all would be glad to hear from Mr. Powell on this subject.

MR. POWELL: I take a great deal of interest in the subject; although at the present time not a breeder of horses, I formerly have been. I did not expect to talk on this subject at this time, and have not given it the thought the importance of the question deserves. But it is one that should interest not only every horse-breeder, but every man who has the interest and welfare of the state at heart; because whatever is accomplished to improve the agricultural conditions or the breeder's conditions, or adds to the value of the products of the state, is of interest to every man living therein.

The question of breeding from mongrel stallions is one that should have been taken up by the breeding interests of this country long ago. We have failed to do or accomplish what might easily have been done had we taken the pains regarding our sires that foreign countries do, to whom we are paying a large amount of money for stallions brought to this country. For instance, in France the income to the government and the people from horses that are exported is enormous, and the reason why it is enormous is because they have been taking more pains, have been breeding better horses, breeding to pure-bred and recorded sires. The government has taken that matter in hand,

and has, for many, many years, been conducting the horse breeding of that country in such a way that one of the largest sources of income is from the exportation of stallions and mares to other countries, and we are paying a large amount of money for them in this country when we should have bred them at home. There everything of that kind is done under the supervision of the army; army officers have control and charge of all the breeding interests, and the stallions are owned, in large measure, and kept by the government for breeding purposes. Only stallions of certain grades can be allowed to be used, excepting for a man's own private purposes, and not to be used outside.

I believe we should have a law that would make it impossible for a man to keep, for public service, an inferior, poorly-bred stallion under any consideration. As the Commissioner has suggested, it may be questionable whether it would be right to immediately cut off the use of a stallion that has heretofore been kept for service, without some opportunity for him to redeem himself or to get some value from the horse which he already owns. But we should have a law to take effect in the very near future, after which no horse shall be used as a stallion unless he is of a certain standard. I have been wondering whether we should not also have a system of inspection. Breeding alone will not do all we want to accomplish, because we know there are many domestic animals of all classes, the bovine as well as the horse, that are well bred as far as pedigree is concerned. But we must bear in mind that a good pedigree is only valuable when it is attached to a good animal; and how we are going to regulate that without having some system of inspection is a question with me. I think it will ultimately come to that. In France it is done; every stallion is inspected before he can receive a certificate; inspected for soundness and to determine if he is free from any hereditary tendency or disease, and of a type that will pass the rules of inspection. So, I hope that from this time something will be done to eliminate all that miserable class of stallions we see about the country and standing for a fee that is merely nominal. Still further, to bring back the standard where it should be, should there not be some appropriation by which horses of a high character can be kept at a small fee. That is

done in other countries and it is encouraged by the government by the payment of a large amount for this purpose. The government is also certain of the best purchasers of the horses that are bred. All this should be taken into consideration, and in drafting a bill I think it should be very carefully considered; for I think it is one of the most important things in this state, since the breeding of horses here is certainly at a very low ebb. We breed no class of horses that is perfectly adapted to any one particular purpose. Take these draft horses—nearly all the farm horses come from the West. We should breed them at home. Our cavalry horses are not what they should be; we are breeding very few first-class cavalry horses. And the standard of horses of course, at the present time, has come down to a point of mere speed alone; it makes it almost valueless for any other purpose.

I hope you will persevere in this matter, and that the Commissioner will have encouragement to sanction a bill that is going to alleviate this question.

MR. HUSON: I know you are glad to have Mr. Powell's views on this subject, and the reason I called upon him especially is the fact that he is not now engaged in horse-breeding. His view of the subject cannot be taken as the view of a man now engaged in the industry, to be personally affected by anything that might be done or recommended; his view is not from the personal standpoint, but the broad, state-wide view as to what policy we ought to pursue in the interests of the state at large. He brought out two very important suggestions, which I think go almost to the foundation of this subject; one is that it is not every well-bred sire that is fit to serve as the sire of our future generation of horses—that something more is required than pedigree. The pedigree goes for something; a well-bred animal is better than an animal of the same type without breeding, yet it is not every well-bred animal that is fit for public service. Not only should we have the breed, but also the type of animal representative of that breed.

Another suggestion which he made, and which I hope will receive general discussion here, is in regard to the availability for public service of the highest type of stallion. I hope the

time will never come when the State of New York will have to engage in the horse-breeding industry by owning stallions. Where that has been tried in this country it has not worked out, and is not working out as satisfactorily as the promoters of that plan fondly hoped. Some states find that they have upon their hands stallions for which they paid very large prices, away beyond what individuals would be required to pay, and that their services are not being utilized to the extent they ought to be. And this should not be undertaken, in my judgment, until at least every other means to get the proper sires before the public has been tried and found lacking. But Mr. Powell suggests what, to my mind, may be a solution of this troublesome question — that the highest type of sire should be available to approved mares at a comparatively nominal fee, and I believe that it should be the policy of the state to subsidize, in some way, stallions of an approved type, so that they could stand for the public service at a nominal fee, so that there should be some incentive on the part of the stallion owner for the purpose of enabling those stallions to stand at a fee which would be generally utilized by the owners of mares.

I think we would like to hear from Mr. Ward on this subject.

MR. WARD: I did not suppose the Commissioner would call upon me to say anything, for it has been some years since I have been breeding any horses. But I do believe that this is one of the most important steps that has ever been considered at a meeting of the State Breeders' Association, and I hope and believe that some action will be taken, before this meeting closes, that will look to a condition of affairs that will make it possible to breed good horses in the State of New York.

I want to agree with every word that Mr. Powell has said; but further than that, I believe that one reason why we have such a dearth of good horses in New York State is that there is little incentive to breed good horses, because there is not a demand sufficient to bring the best class of purchasers in the state. We are buying horses outside instead of selling them. And if we had a type of horse, a class of horse, that would call the best class of buyers into the rural districts, there would be a demand for horses

that would pay a higher profit than any other one thing the farmers could do.

I do not know what it is possible to do for the passage of laws that would benefit the breeders, but there are two or three things which I think ought to be done. I would make it impossible to register any grade stallion. I would not register anything except a pure-bred stallion, and protect that man. And when we breed the class of horses that we should breed, a class of horses that the best market demands, we will find that there is more profit in breeding good horses than any other thing we can do on the farm.

The latest government statistics show that the cost of breeding or producing horses is about \$155 during the first three years of age. You all know that the class of horses in greatest demand are selling at a very high price, and there is no better place in the country than right here in New York State. One of the six-horse teams that won first prize at Chicago was bred in Massachusetts. I believe we can breed good horses here in this state, where conditions are much better than they are in Massachusetts.

If there is encouragement through subsidy, or something of that kind, to protect the owners of good stallions, and to protect at the same time men who are buying pure-bred mares and raising colts for sale, so that they can get a better price for their colts, we will find that we have gone a long way ahead if some move is made toward the enactment of laws that will protect our horse-breeders through inspection, as Mr. Powell says, and through registration that will protect the owners of pure-bred sires.

MR. AKIN: I believe that this stallion law is one of the vital things in this state. I find that in other states they are eliminating the unsound stallion, and if they are actually doing that they are putting this state to a disadvantage. Only last Saturday I was in Indiana, and at a large breeder's stable there he showed me a stallion that was wind-broken. He said, "You can use that stallion in your state, but we cannot use him here." Just think of it, we are the dumping ground of unsound stallions of other states.

I believe it should be against the law to allow an unsound stallion to be used or imported or sold. Then we will be on the same footing as the other countries. Until we do that, we will

still keep breeding the cull stock that we are producing at the present time.

I will show you to what extent they go in other countries to eliminate unsoundness. In Belgium this year, where I traveled for some time, I visited the farm where the champion sires are kept. The subsidy keeps those best stallions there. That is the country from which the highest type of horse in the world comes, and it is the country where their average crops are three to four times what they are in the United States. If that is not an example for us to follow, I do not know anything about horse-breeding.

MR. SESSIONS: I wish to give the members of this convention a little information in regard to some of the conveniences that we have provided for them. We have three rooms on this floor, "H," "L" and "M," for your use, or for the use of the societies affiliated with the New York State Breeders' Association.

MR. HUSON: I have here a letter from one of the oldest and most valued members of this association. He has been its honored president and, during all the years of its existence, its loyal friend. For a considerable time he has been confined to his home by serious illness, but is now so far recovered as to be able to write this letter of greeting to us. We will all rejoice in his recovery, although we regret he is not able to be here. For if he were here this morning we know that he would enter with spirit into the discussion on this particular subject, and would have something worth while to say.

"I am very sorry that I cannot attend this meeting as I have formerly done. I know I should enjoy it very much, but I fear if I attempted it, it would overdo me, and as I am improving all the time I feel that I should forego the pleasure of attending this year, hoping another year I may be in perfect health again. I wish to be remembered to all the members, and the speakers from other states.

"Very truly yours,

"DR. C. D. SMEAD."

Meeting adjourned until 2 o'clock.

SECOND SESSION

WEDNESDAY AFTERNOON, JANUARY 22

Meeting called to order at 2 P. M.

MR. HUSON: Before taking up the program this afternoon, I desire to announce the following committees, which are provided for by the constitution:

Auditing committee: C. C. Gould, G. E. Peer and C. C. Taylor.

Committee on resolutions: E. W. Mosher, G. A. Smith and W. P. Schenck.

We have a program this afternoon that will occupy the entire afternoon, and it is necessary we should take it up with some promptness if we are to get through with it. You will observe the note at the head of our afternoon program,— that it was prepared for the purpose of presenting the claims of the various types of horses that can profitably be raised in the State of New York, by acknowledged authorities on the subject. The gentlemen who have been selected and who have consented to present this subject to you, represent perhaps as widely divergent views on this subject as can be selected.

The first speaker on the program is not a resident of the State of New York, but if there is any man who is qualified to speak upon the subject of the type of horse that the farmer needs, not only on his farm but for which he can find a ready market, it is Mr. Henry of Minnesota. The conditions in Minnesota are not very different from the conditions in the State of New York, so far as raising horses is concerned. Mr. Henry, as you are aware, has had a vast amount of experience on the subject, and will speak authoritatively, and it is with great pleasure I now present to you Mr. Forest Henry, of Dover, Minnesota.

THE TYPE OF HORSE NEW YORK STATE FARMERS SHOULD RAISE

FOREST HENRY, DOVER, MINN.

I can assure you that it gives me a great deal of pleasure to meet with you this afternoon and discuss this subject.

I believe there was a time when New York State farmers could, perhaps, profitably buy their horses in the West, get their dairy cows from the West, and very many of the feeds that they would

feed those animals. Why? It was simply because at that time it cost us very little to produce them; the land on which they were grown was worth practically nothing. There was a time we could grow a horse in Minnesota at \$25 and make money in the business, provided we were not very particular as to the horse-service. There was a time when wheat, oats and barley were sold at ridiculously low values. But those times are past. To-day the very land the horses are grown on, that you are buying here, is worth fully twice what it averages through the State of New York. And raising these horses is costing us fully as much as it does here. If this is true, it certainly seems that it stands you in hand to investigate this matter and see if you cannot more profitably grow some of these horses that you are now buying, rather than expecting to buy them from us.

I am certain that the age of the horse has not passed. Why? Because wherever I go I find the horse is selling at more to-day than any time I can remember. Now this would not be so if there was not a demand for them. We say the tractor is going to take largely the place of the horse on the farm. That is true in some localities, but I do not believe it to be true on the average Minnesota farm and the average New York farm. Take it in the provinces of Canada, and on those broad plains in Dakota, and still further west, where grain raising is the main object of the farmer, I believe that to be true; but on the other hand, on our smaller-sized farms — where we have a variety of work to do, I mean — the tractor is not profitable, where, for instance, the large part of our work is trucking and cultivating.

It is for these reasons that I believe the horse is still going to be with us, and going to be a big factor in farming, both in New York and in Minnesota. I learn that according to statistics gathered by your state department, it costs at the present time in the State of New York about \$300 to maintain a team a year. What are some of the items that go to make up this large expense? One big item is the initial cost of that team, and the deterioration in value. If we can eliminate this it will largely reduce the cost of the team during that year, or each year. I want to say this, that during 35 years of farming in the State of Minnesota I do not have to charge up one cent to the initial cost of that

horse, nor to its deterioration in value. Why? It is because we have been breeding those horses on our own farms; we have been working them from three years old until six or seven years old, and at the end of the game we can sell a horse for more than it originally cost us. The city buyer wants that horse, that is, at least six years old, and he will pay you just as much for it if it is eight years old; and the farmer controls the horse, works him for five years, and then sells him for the maximum value, because he can easily be sold if a horse of the right type.

What do we find on the New York farm? We find that the farmers are not growing their horses; they are buying them largely from the West. They are also keeping a quality of horse that is very inferior, a horse that is not calculated for farm work in any sense of the word; and they are keeping a horse that is hardly worth more than his hide. This accounts for the large expenditure. I believe that the horses of New York are not at all adapted for the use to which you put them. Just a few days ago I was riding in a bus from the hotel to a little village a couple of miles distant, and the bus-driver — it was a very bad day — said: "How fortunate it was I used my large horse, if I had used my small horse he could not do the work." What was it he called a "large" horse? A horse that did not weigh a pound over 1,050 pounds! And if I talk with your farmers through your state, what do I find? I find that the horse they are using on the farm is a horse entirely unadapted for this work, a horse of mongrel breeding and largely of trotting blood. Now a horse of this description, is not calculated to do the work upon the farm.

Your farmers and dairymen will tell you this: If you are going to produce either milk or cream at a profit, you must have a special animal. If you are going to do draft work economically you must have a horse adapted for that work, or serious results will follow. If the horse is too small to do the work the man is liable to only half do the job. The average farmer does not plow more than three inches deep; one reason is, the horse is so small he cannot pull the plow. I find this to be true, that while your soils are more stubborn than those of Minnesota, less is actually accomplished and you are doing more work in the way of cultivation. Now one reason for this is that you do not use on the farm those horses that are well adapted for your work.

We hear, wherever we go, this point raised as a hindrance to farming, that it is impossible to employ labor on the farm. It is true that labor is scarce, and I believe one way we can partially solve this problem is by the employment of better machinery on our farms, and in that way we will eliminate largely the matter of man-labor. In order to do this it calls for a larger horse, a better horse, a horse that can pull these implements and pull them to advantage. Let us see how it is when we employ a little horse, largely driving blood; that horse, in order to do that work, has to work on his nerve day by day. It means simply that you have to train him, and that there is a great danger ahead; he would not last nearly so long as though he were a heavier horse and could pull that load by his weight. I want to make a plea this afternoon for the heavier horse on the farm, a horse that will do your work decidedly more economically. Then you will not only have a horse that will do your work better, do it cheaper on the farm with a great deal less risk, but you will have a horse that you can sell in the city market at a good price; and you are breeding horses to take his place.

Now I do not believe in wearing horses out on the farm. I do not think it is necessary. I do not wish to be understood as saying that every horse on the farm should be a brood mare; I know where this is done the work itself is neglected, or the mare or the colt is misused. This does not pay. I do believe that on every New York farm there ought to be one good brood mare in service, and then she ought to be bred by the very best draft horse available. The colt should be kept for three or four or five years, and well handled. Just as well be worked, provided it is not misused, and then sold at the maximum price.

Another thing. I believe that they ought to have better horse-men, as well as better horses, on these New York farms. If some of the horsemen I have met in this state are a fair sample of what your men do here, God pity the horses. It seems to be their sole object to get all they possibly can out of the horse. That is not the way we use horses in Minnesota; we do not try to work a horse to death. No man or no horse can do all he possibly can without a breakdown.

Just a word or two along the line of breeding horses. In re-

gard to that registration law which is proposed, I want to say that it has accomplished a great deal in our own state and in our sister states in the West. Before this stallion registration law went into effect fully one-half of the stallions in our state were grade stallions; within five years of this time it was almost impossible to find a grade stallion in Minnesota. I believe there ought to be a physical examination of those horses; and the board that is empowered to do this work ought to make a good, thorough, physical examination, whether it be a grade or a full blood, and if you are to admit the grade stallion to service I believe it ought to be so stated on the registration certificate. I do not think it would be wise at the present time to bar all your grade horses, but on that certificate, it should be noted whether it is a blooded or a full-grade horse. And possibly it might be well, after a term of years, to have it understood that after that certain time no grade horse will be admitted, but for the time being I do think it will not be the part of good judgment to bar all horses. This will gradually adjust itself.

I am not sure about the other suggestion that was made in regard to putting a premium on full-blood horses brought into your state. I do not believe it is necessary, in a business that pays, to have put this premium; it might be well for the time being, until this horse business gets well onto its feet. But I do think that it would be unwise for any period of years to have to bolster up the business by premium.

A word in regard to the breeding of horses on your farms. One thing that you are going to be handicapped by is that you have such little mares at the present time. We say a man always does well when he does the best he can. Breed some of the best mares you have to the very best sire that you can find, and perhaps in a few instances you will be able to pick up or buy a very good mare of the type that you wish to improve. This will be well and good. But do not, under any consideration, use anything but a thoroughbred sire, and a sire of merit. You must become horsemen; you must study the business, and study to know what is required in a good horse and in one that is not so good.

A few thoughts in connection with this matter of breeding. After you have selected your mare and your sire, your success as breeders will largely depend on how that mare is cared for and how the little foal is cared for. Throughout your state there ought to be a systematic line of education along this line. It is not at all the same law that applies to the breeding of dairy animals that applies to the breeding of draft horses on your farm, or horses of any description. Now one thing is pre-eminently true, that we must, if we are going to raise a good strong foal from this mare, give her exercise during the winter. This is absolutely necessary. I would not say for a moment that this mare could be worked without injury; but if you are going to get every bit out of her every day, do not work her. She must be fed properly but not overfed. I find that when a man gets better stock on his farm it gets noised around in his neighborhood, and he will, as a rule, overfeed that particular animal. This is true of every line of live stock on the farm. A brood mare should not be fat; do not feed her on fattening food. She must be fed a good strong ration, but one not having an inclination to fatten her, and must have absolutely regular exercise.

At foaling time. One-half or more than one-half of all the colts that are lost throughout the Northwest are lost through one trouble alone, and that is what we call navel infection. Let us see how we can prevent this; because if we have paid a good price for her, and a good service fee, we cannot afford to lose this little colt. As a rule the farmer does not understand it. One-half of the Northwest farmers will tell you that they did not lose a colt through that line. The trouble comes through misunderstanding. The colt perhaps will be dropped all right, and then perhaps we will find that one of the joints is enlarged; in a day or two perhaps another knee is off, and then we begin to accuse the brood mare, when the brood mare is not the trouble at all. But what is the trouble? It is simply blood poisoning — navel infection. How can we avoid it? First of all, the ideal place for this little colt to be born is God's outdoors, out in the green pasture, and then you will probably have no trouble whatever. Many colts, of necessity, have to be born indoors. Then what shall we do? First of all, let us see that the stall is thoroughly clean, and

then see that it is thoroughly disinfected; bed it down nicely every day until the colt is several weeks old. I should take the trouble to touch that little navel cord with some disinfectant. Then you will have no troubles, as a rule, along these lines; you will eliminate one-half of the danger when this time is past.

Just a word or two as to the future care of that little colt. Do not allow him to follow the brood mare in the field; you cannot expect growth if you do this. He is made for a heavier horse later on; he has just awkward joints. Just as soon as you compel this little animal to walk day by day behind the mare, he is going to make a permanent growth. Keep him closed; he will worry and fret, but in a day or two he will be all right. I find it a very good plan to have, over in one corner of the stall, a low-down box, where he will have bran or oats; you will find him enjoying himself.

In feeding the brood mare, feed her in that low-down box; because the time is going to come when the colt will have to depend on himself, and the earlier you put the responsibility on him the better he is going to be. Let him learn to eat without the mare regularly at the time of feeding.

As to the time of weaning. I am not very particular, not nearly so particular as I used to be. I should prefer he should run three or four months; but, if I had more work for the mare to do after he was ten or twelve weeks old, I would just as soon put him in a box stall, provided I had cow's milk to give him. Let it be sweet. Feed him about three times a day, in the bran — not a large mess, two or three quarts perhaps. Then see that he has a nice manger of oats and hay — about two parts, by measure, of oats, one part of wheat bran; they are both strong in lime, in building material; they provide exactly the elements of growth necessary. Let us take pains in feeding him.

Just a word of caution right here. When you shut the colt up in the box stall, it is very much better to have two colts than one, because that little colt must not be confined there continually; he needs exercise just like any other little animal. If you have two to run together it is preferable; if not, I should buy another at this time, and I believe it will pay you better to do it, provided

you can get a good one; but do not buy anything that is not good, because it does not pay to feed high-priced feed to a poor colt.

In regard to feed. First I want to say there is no animal on our farms that will pay us as well, for the feed consumed, as the little colt. It was a matter of surprise to me, some ten years ago, to find how much growth a colt will make on a certain amount of food during a period of four months, regularly every week. These were draft-bred animals, they were running with their mothers on grass, and the mothers were given four quarts of oats each day. These colts made an average of thirty-five pounds of growth each week, and two weeks in succession, when the weather was perfect, they made forty pounds each. I should not have believed it; simply tried it. There is no feed to be fed with so much profit as the grain we feed this little colt. The first winter it must be well fed. If we do not give him grain rations we give him rough feed, and the consequences are when the spring comes we have not a colt we ought to have; it will simply look as though it swallowed a feather tick; it will, all its life, be a horse with a big stomach. It will also be a horse that is very apt to take colic, and a horse that is very apt to get the heaves. Avoid this; you can by feeding a better ration. That is the trouble with our western horses we get from the plains; we find that one-half that we get from the plains in the West, where it is a feast or a famine with them, where they have to eat about two hundred pounds a day in order to keep up life — we find one-half of them come down with the heaves. Now we cannot afford this.

Let me make this statement: I should rather, so far as the cost is concerned, keep a horse through the winter than a weaning colt, and it would not pay to feed it in any other way. One other thought that I should like to bring out is this, that in our selection of the sire and of the dam, we want to take into consideration the action. To-day that is considered fully as much as the size and conformation of the animal. People have ceased years ago wanting that plodding, slow horse; they want the snappy animal. That is the kind of horse that the public is demanding, and we on our farms want to grow what the public demands. Years ago I tired of educating the public as to what they wanted to buy. That is the kind of horse we want on the

farm; that is the kind of horse the buyer wants, and we cannot reproduce the horse unless we have those qualities in the mare and in the sire. I always want to see a horse, whether it is sire or mare, have a lot of surplus power back of it all the time. It is that surplus action that brings us the cash. If he has just simply action enough and movement enough in him to move himself about, he is not going to make you one cent of profit.

One more point. What is the great problem that confronts our farmers to-day? When the Bankers' Association of our state met a year ago, what did they stop to consider? "What can we do to keep the boys on the farm?" For two whole days they considered that proposition. Down in Iowa the boys did the very same thing, and that is what I hear as I go from the Atlantic to the Dakotas—"What will we do to keep the boys on the farm?" Sometimes I think they ought to go a little further, and that is this: "What can we do to keep the old men on the farm?"

I believe human nature is about the same all the world over, and I never felt so poor in all my days as I did when I drove a poor team. And when it comes to the boys, there is nothing we can do on the farm that will so interest the boy as the horse. When I was a boy I did not expect to be a farmer, but I had pictured in my mind that fine house in the city. Where did I solve this problem? It was when I was out in the field, alone with that team. I had it all fixed up when I was in town. And then I would look at that team, and I said, "I cannot leave that team," and before night I decided not to. And so with that boy. If he drives to town with a poor team he will hitch it up some place, but, on the other hand, if he can drive down the street with a team well equipped he is proud of them.

MR. HUSON: The next speaker on the program is Mr. Francis M. Ware, a name very familiar in the State of New York to those at all familiar with the horse-breeding industry. For more than forty years he has been a breeder, a buyer and a seller of horses of all types in the New York State markets, and has probably handled and sold more horses, and knows more about the type of horse the market demands, than almost any man in the state.

I regret more than I can tell you that Mr. Ware is not personally present this afternoon, but he has commissioned Mr. Cole to read his address.

THE TYPE OF HORSE NEW YORK STATE FARMERS SHOULD RAISE

FRANCIS M. WARE, BROOKLINE, MASS.

We meet here to-day to discuss the future of the most important element in successful farming—the horse. I think I am well within the facts when referring thus to the horse—for without him, or his relatives, the mule and donkey, as an item, no farming operations have ever been or probably ever will be either broadly possible or largely profitable.

It is an astounding fact that this animal is the only species which the average farmer does not produce, both for his own usage, and in the nature of a cash crop. Be your branches of agriculture what they may, you one and all use horses to some extent, yet I will venture to say that among those assembled here this afternoon, there are but a moiety who produce the animals on any large scale.

The county is being clearly swept of equine garbage—it is up to us to see that it so remains. No man can afford to allow his name to be associated with anything but excellence in any breed of animal, especially the horse. This was always true, heretofore, but it is trebly so to-day.

If one is by instinct and taste a “cow” man, or a “sheep” man, or a “poultry” man; if horse, to him, is nothing but a means to the end of labor—leave horse-breeding alone. If you enter upon the undertaking with the intention of “raising a colt” from old Fanny, or Jenny, or Molly, chiefly because these family relics are too decrepit for any other purpose, pray leave the undertaking to those more broadly intentioned. The men who breed an old wreck of an undersized mare to some mongrel, or short-breed cross-roads stud-horse, just because the one is good for nothing else, and the other stands at a cheap fee, deserve all the misfortune they are courting—and may it come to them good and plenty, for they do the whole country incalculable injury.

Breed the best or nothing. Surely self-esteem should prompt any man to do as much. The curse of the country, and the ruination of the horse industry is the flood of little scrubby, weedy, course, unsound, half-broken rips and jades overwhelming all the markets in America—brutes which bring disgust to the



FRANCIS M. WARE.

men careless enough to breed them, and an invariable loss; and the same to those who are foolish enough to buy them, even at the pittance they pay. The common, little, plain horse has absolutely no future anywhere; any horse, to sell at all nowadays, must be at least 15.2, not under 1,050 pounds, and excellent of his sort at that; every extra half-inch, and every additional 50 pounds of mellow, ripe, well-trained, good-looking, sound, active "horse" bringing a handsome equivalent in dollars.

No man ever bred good horses of any kind without good mares; no country ever gained a reputation for first-class equine produce unless, as a rule, the native mares averaged high class of their sorts. No stallion, or number of stallions, ever filled a farm, a locality, or a country, with good horses, unless they had access to genuine good mares. Do not let anyone fool you by saying that his stallion gets good colts from anything and everything. Every good colt any horse ever got had a good mare for a dam, or the progeny would not have been what it proved to be. The dam's excellence might not have been recognized, but she possessed it; and results proved it. I should have far more confidence in the outcome in using a poor sire and really good mares, than in trusting to a good sire and the average wretch sent to his harem.

It is for just this reason that the proposed governmental enterprise of sending out, for cheap public service throughout the country, some fifty thoroughbreds, trotters, "Morgans," and saddle-bred horses will surely fail in producing the sort of horses the farmers can use, and the army will buy. Who is to supervise the sort of mares sent to these sires? If the Government wants to secure a supply of good horses to draw upon for army work, it will go far on the road if it will bring about a return to the farmers, for work and for breeding purposes, of the thousands of big, fine mares that annually are sold in all our large cities — especially New York — at almost any prices, when thin or lame for temporary reasons; or worn by city work to a point where they need recuperation and rejuvenation — cannot secure it — and are consequently sold for a trifle to continue their downward way to the boneyard.

Better far than broadcasting stallions would it be to buy up such mares, send them to various farming and breeding localities,

sell them at auction, and give the Government an option on any foals at some age at a specified price. No results can be obtained from the Government's present efforts for at least six years, and what these results are likely to average then, the outcome of the breeding experiment of the Jockey Club with its thoroughbred sires for the past five or six years in New York affords conclusive proof, and a horrible convincing demonstration of "how *not* to do it."

The Jockey Club put out some 70 thoroughbred stallions, a few of them high-class, most of them very far from that, quite a number dreadful wretches, among the farmers of New York. Some 4,000 mares were bred in all these years; 1,700 offspring materialized. Of these stallions, but 26 now remain in service. Most of you have seen the product, if not the horses. Did they impress you as being the sort a farmer could use, could sell profitably, would produce in quantity if he could? Were they the sort any market would assimilate in numbers for any purpose, or were they absolutely no-account nondescripts — equine jokes — and most expensive ones? I can only testify that I sold for various people, youngsters from one to four years old, both at private sale, and under the hammer, at \$20, \$25, \$40, \$60 per head, and oh how dear at that! I have judged numbers of these "creatures" at horse shows, and never have seen one I would give the cash values of the ribbons I had to award for it. You gentlemen who live in the New York localities have probably seen many, possibly own some, of them. Will you not give your opinion, and experience — not of your one ewe-lamb, but of the average quality of the half-breeds you know in your own or any other locality.

That most marvelous of nations, the Japanese, with their extraordinary faculty of digging the "meat" out of any undertaking, and discarding forthwith the rubbish, discovered some years ago that they, as a nation, were sadly deficient in horse flesh. Now listen to what they did. First, they appropriated about \$5,000,000 to be spent within twenty years in importing stallions of every breed, and of the highest class of each breed. Second, they sent emissaries — one committee — to all other countries to inspect their horses, and to study their methods of handling and breeding. Third, they bought young, sound, clean-

bred registered animals. Fourth, they sent all animals of a certain family to one locality — trotters here, thoroughbreds there, Percherons yonder, Shires thither, etc., and allowed no other sort of stallions in that locality: they castrated all native and all grade stallions; they altered every male colt when he was weaned; they forbade the use of any stallions except those thus localized, all of imported stock, registered as clean-bred in their respective stud-books. What is the consequence? To-day they are well on their way in Japan to clean-bred stock, for already they have many in the third generation — five returns to the original blood making them clean-bred for all practical purposes of type, etc. Moreover, if they need a certain kind of horse, they can simply go to the locality or province where that sort are raised.

There are 23,000,000 horses in this country to-day, and it will take a buyer from a week to two weeks to pick up a load of a sort and at prices, that will satisfy the “main one” at home that he is not a hopeless incompetent. Yet some 50 odd years ago the Japanese were regarded as barbarians — while we have been house-broken and educated these 300 years!

There should be a national law compelling every farmer to keep nothing but mares on his farm; to oblige him to sell all geldings as 4-year-olds. Thus farmers might be induced to breed more generally, and thus they would be encouraged to hasten maturity in their products, feed for condition and easily finish and handle and work lightly their youngsters at an early age. Your drafter earns something on his keep at two, is saleable (and largely in use in cities, etc.) at three; a dignified, finished horse at four; a profitable investment at all times; a product that teaches a lot by showing the benefits of liberal feeding and good care to every kind of stock, and the hard cash equivalent for such liberality.

The brood-mare is the only animal that will do your work, and “work while you sleep,” in nourishing the unborn, or the living foal, or both, as well. You boast of the milk, butter, calves, from your well-bred cows; your sheep give you lambs and wool; but your mares will provide for all of them, in working and harvesting crops; provide for herself in the same way; do likewise for yourself and family; transport crops to market, family to town, etc., yet nourish all the time an embryo, benefiting by the labor

of its mother, and finally giving you as an asset a "catch crop," so to speak, of promising young horse-flesh, which, properly reared and trained, is always negotiable at a profit.

We all long to own real estate — what profit per acre does it pay? We look with envy at the owner of Government bonds — what percentage does he draw? Gentlemen, you cannot name an investment in agriculture that will pay you the profit in proportion that a few good mares will do. Invest \$1,000 in any proposition — what will you get as interest upon it? Probably 5 per cent. or \$50. But suppose we say 10 per cent. or \$100. If any man is careful, and knows what he wants, he can go to the cities, or even into the big wholesale markets, Buffalo, Chicago, etc., and buy from three to six good, big, heavy mares, with fair quality and good "fronts" for \$1,000. If these mares, bred to a good heavy stallion, do not drop him foals that will nowadays bring him \$250-\$350, as early three-year-olds, he is in hard luck indeed, and also a bad buyer and judge. These youngsters will have cost not over \$150 each to raise from birth, nothing before that as the dam works regularly, and because from two-year-olds they will have done light work enough to pay for their keep, partially at least. Your \$1,000 worth of mares should bring you an annual \$500 at least of profit in colts sold, probably more. Can you put the same sum into any straight farming operation, and expect or receive a like dividend?

Now as to the sort of horses the farmers of to-day should breed, and how they should breed them. Right here let me say a word about myself, that you may understand that what I present to you to-day, through the gentleman who has kindly undertaken to read these remarks to you, is not theoretical, but the fruit of forty years' active personal experience as a horse-dealer, breeder, and farmer — nineteen of these years being passed as treasurer, managing director and auctioneer of the American Horse Exchange, Broadway and Fiftieth street, New York. I have bought and sold and handled thousands and thousands of horses of every breed for every purpose, and have made always a good living in this most difficult business by anticipating futures, and guessing public demand correctly. The American Horse Exchange was the largest and best-known institution of its kind in the world,

and handled the best of all the various kinds of horses, ponies, etc.

Our future horse supply is coming entirely from you gentlemen, and such as you, who produce annually your one to four or five colts from the mares you work on your place. The huge horse-breeding plants are a thing of the past; they never were profitable in that past. Each locality must, in the near future, take care of itself or pay prices for horse-flesh as yet unheard of, high as the figures of to-day appear. The West has reached a point where it can itself use all the horses it can produce in the near future. You should consider this the most serious of farming problems. Operations begun to-day will not benefit you for the next five years to any extent. You will have to work out your own salvation, or in 1918, you will pay for the "farm chunks" you think dear to-day at \$400-\$500 a pair, \$700-\$1,000 a pair, and the \$150 coarse, cheap "chunk" of to-day will be bringing near \$300. All nonsense, you think, with 23,000,000 horses in the country by the last census report? Gentlemen, of that number at least three-fourths are light, nondescript, worthless trash — competent for no farming purpose, and a living disgrace to the people who bred them. Try you ever so carefully for the best, you will inevitably produce a large percentage of the mediocre, and the wholly bad.

For sixty years the farmers of America have been, via the old family mare and the cross roads mongrel stud-horse, producing the worst rubbish on earth (for the most part), and have been satisfied with such mistaken method. The millions of hard-earned eastern, southern and northern dollars that go West every year for farm-horses furnish a costly commentary upon this wholly vicious neglect of the very first — the elementary — provision toward successful farming, the ability to find at moderate prices, or to produce much more cheaply, able, vigorous, active, good-looking heavy horses, which shall handle modern farm machinery, etc., competently.

No horse under 1,400 pounds weight has any place in modern farm operations; the 1,700-pound horse is even more appropriate to the labor required and to the market. You know you want him. Lamenting high prices would not help matters. Get busy!

Go after him! Produce him — work him a little, and sell him before this wretched labor we get nowadays can, through carelessness, stupidity or both, knock him out and make him a cripple, or wrong in his wind. No farmer ought to keep old, weak horses, or use three light screws to do what one or two heavy horses can do cheaper and better. The drain of inefficient animals on the farm is what keeps the mortgages on two-thirds of them. You lay awake nights worrying over the dreaded cholera among your pigs; tuberculosis in your cows or lung worms in the sheep; and never give a thought to the fact that those four old crippled light-weight plugs in your barn cost you more every year, by what they cannot and you, therefore, do not accomplish, than you would lose if all your cows, pigs, and sheep dropped dead to-morrow.

Breed heavy horses, gentlemen, and do not bother with anything else. There is nothing for you New Yorkers in this cavalry-horse business. Do not listen to any one who tries to persuade you that you can raise army horses and ever "break even." The Government has its troubles — but you have your own, and you know as well as I do that the "cavalry" of the future means "mounted infantry," which, in turn, means — in war-time — cheap, little cobs and horses, such as you have raised, if you have bred horses at all. The artillery, however, must have big, active horses; and when the time comes your home-bred drafters will be just exactly what the army will need by the hundreds of thousands, and at your price.

As to breed — heavy breed is good in your business, but when the markets and the buying public of America (and progressively, in Canada also) wholly approve the Percheron and Belgian grades, what use to look further? They stand heat better than any; they are "good doers;" they average types that make it very easy to mate up pairs; they are active on asphalt and all pavements; sure-footed; wear well; do not especially suffer from side-bones, ring-bones, spavins, etc — the result of heavy action and consequent concussion — their legs are free from the heavy growth of hair so objectionable in our climate, because in winter it accumulates large quantities of frozen snow, mud and filth, the weight of which starts the hairs of the lower legs in their roots, causes irritation, possibly fever, thence grease-

heel, scratches, weed, etc. I hold no brief for any family. I do not care two straws what blood any horse carries in his veins if he "delivers the goods" regularly; and if he can be found in quantity; if the markets assimilate him; and if the public approves him. Any horse is a good horse to breed from, but do not be led into breeding some sorts you never see anywhere but on the promoter's farm. Life is too short to make a market for anybody's prodigies — produce what the people want.

Breed what you will, but try to have your mares all of a type, size, etc., so that any two make a good pair. Thus you stand a better chance of getting foals which will pair off well, and a good pair always brings more than two equally good odd horses. Moreover, if your mares are all of a sort, the one stallion will probably "nick" well with all of them, resulting in fairly uniform produce.

Have your mares foal in the early winter, when you can best spare them for a time, and whereby it will not interfere with your spring, summer and fall work. Thus your foals, well weaned by spring time, go right on to young juicy grass and keep growing while the dams are ready for labor in plenty of time. Foals of that age also have a good growth of tail and mane to protect them from the attacks of insects. While it costs a little extra to thus carry a foal for two or three winter months, it is money well spent.

Keep them fat and growing, never let them lose the "colt flesh" if you seek early maturity, and "market toppers." The best cross in your colt's makeup is "grain bin." Reinforce that with liberal infusions of "plentiful hay," "good grass," "warm stabling," and "common sense," and your colt will have more valuable assets than any special blood lines will give him, so far as practical results go. If you will not feed, do not breed. Feeding is 50 per cent. and more of the success element in any breeding scheme. Moreover, visit the wholesale markets, and learn what "market condition" really is; then keep your stock pretty near that level. No markets will take thin horses, no matter how good, at any decent figure or in any quantity.

Feeding does not mean ramming the manger full of hay every time you pass a horse. Nearly every farmer does that; many

farm horses have wind troubles, heaves, etc.; cause and effect right there. I have not in thirty years, fed hay but once a day — at night. No working horse should have it at any other time. A small stomach, like the horse's, is easily overloaded; digestion is damaged; food does little good; it is not what an animal consumes, but what it digests that counts.

There is no special science in feeding. Success lies in the watchfulness of the feeder over each individual; an intimate acquaintance with its likes and dislikes; an open eye to see, and an open mind to grasp and to profit by what one sees. The personal equation is too often an unconsidered factor in the handling of all animals; and I have often had grooms caring for two lots of horses, all doing the same work and on the same feed; yet one man's lot did 30 per cent. better than the other's. Nowhere is this faculty more valuable than in handling young stock — the quiet, watchful, prompt, careful feeder is worth twice what he ever gets in wages, and even thus paid, is a great economy.

Your young heavy horses should be made handy in harness as yearlings; put at light work as two-year-olds; at regular farm labor at three. The surplus should be sold the first time anyone names you a fair price, at any age. You can make a little quick money; you avoid all future accidents, if the colt turns out well he is your best advertisement; if badly, you were well rid of him. Furthermore you do what ordinary business precaution requires every farmer to do — you have started promptly a perishable article on its way to the consumer at a fair profit to yourself. The moment any agriculturist fails to carry out this business precaution with all his produce, he becomes a speculator, and a speculator in "futures" of a very precarious nature.

Should your fancy run to producing lighter horses, the trotter, the large, able, robust animal of that variety of as much good looks as possible, as much size as you can manage to grow him to, some action, and a fair pace at the trot, is the only sort you can hope to both use profitably and sell at an advance over cost. You should mature him early, but you will find it very hard to sell him before he has a full mouth; he will not be very valuable to you while young as a worker; the demand for him is growing less every year; it is to just such horses that the motor car is

the worst enemy, for he is the sort they first displace, both for pleasure and for business.

The saddle-horse is a specialized article; the hunter is in but limited use, and only those after "schooling," especially apt at the game bring good figures; the carriage horse is snowed under; the roadster finds no demand; the fast trotter is in the hands of the few wealthy breeders, etc., who can afford to take a chance.

The trotting horse has been bred in New York State for many years with good results, but the demand for the old-time "up-state" carriage horse has fallen away to small proportions. It is up to you to guess whether that demand will ever revive. As a dealer in such horses for forty years, I can only say to you that while sentiment bids me hope it may, ordinary business common-sense tells me it will not, and I have, with dozens of others, given up the light horse business before it reached the point where there was no business left to give up. The trotter is the best all-round horse in the world, but for fifty years we have been breeding speed-machines, regardless of any other purpose. We have them, but if the speed-market fails, what other outlet have we prepared for our product? In this state it is no use to advocate trying to sell him for a saddle horse, which is a special trade the native farmers do not understand; nor for a hunter, which is still more a special trade, with a very limited demand, and one in which the high prices you read about are never paid for the raw material, but only for the finished article shown to the best advantage in the hunting field, and exposed primarily to all the accidents such an education entails. There is nothing for any farmer in trying to raise fast horses, and the effort so to do has ruined many a farmer, and his boys as well.

The thoroughbred can have no value for the agriculturists of this state, although much effort has been wasted to convince them to the contrary. As a dealer I will tell you that the one horse the markets of the country never yet would assimilate was the thoroughbred and his grades that looked like thoroughbreds. If you accord me belief on no other point, I beg you, gentlemen, to heed me here, and to consider the practical end of the matter only. If anyone else, with as long a market experience as myself, endeavors to assure you to the contrary, accord him what approval you choose, of course, but be sure he speaks from hard-

won and costly experience, and not from sentiment. There is not a man in the country to-day who has spent the time and money that I have in trying to make the thoroughbred a practical work-a-day horse — and all in vain. I believed in him. I listened to the theorists and sentimentalists, and I made myself poor, and have kept myself poor trying to prove by actual demonstration that they were right. You will hear of a few wealthy men who breed thoroughbreds and sell developed hunters now and then for big money — but you do not hear of their failures, and the pitance they received; and you must not overlook the fact that the few horses they sell go to personal wealthy friends whose trade you could not get, and if you could, would find it but a small matter in the end. There are plenty of other states to take up the breeding of thoroughbreds and saddle horses and fast trotters. Let New York cater to other markets.

The motor car has worked vast benefit to the horse breeding industry in that it has opened every one's eyes to the narrow roads of usefulness remaining to the horse; has greatly increased the demand in those roads; has made it utter folly to try to produce anything but the very best; has provided a market for that best at very profitable prices; has demonstrated clearly that along these lines the heavy horse has a far more dependable future than any horse we breed — a future into which no element of speculation enters, but which assures a steady, liberal, legitimate demand. The time to prepare to fill that demand is right now; the time to get busy to cut off that yearly unwarranted outlay for western work-horses is this minute.

There will doubtless be addresses made to you to-day upon army-horse breeding, but I would warn any average farmer to be very careful what he attempts here. The Government gives you no guarantee that it will ever buy your produce at all. It can name you no other market for it. It does not agree to purchase such young horses in any definite yearly quantity, for any definite number of years, at any definite places. It does, however, take an option on any colt you may breed (remember it will not touch the fillies at any price of \$150 per head at three years, this may mean up to the day before he is a four-year-old). This option you can only clear by paying \$25 stallion fee on a youngster you cannot, then, tell anything about. Does all this look, or "listen,"

to you like good business? It is good business for the Government all right enough, but do let us establish a record in this matter. Let us prove for once that the farmer does not always mean to be the goat.

Some of you probably "fell for" that political game of the Jockey Club, and I wish I had the time to tell you the inside history of that piece of breeding philanthropy. If you were an innocent party to that enterprise, and profited by it, I hope you will get up right now and tell this meeting how much you made, and what prices you received. If you, on the other hand, lost your time, your temper, and your money, please be equally frank. The truth should be known about all that thoroughbred-stallion-for-the-poor-dear-farmer-to-improve-the-breed-of-horses-business, and if the result has been wholly or even approximately successful, all farmers should know the facts, and share in the emoluments on their own account.

No Government can expect to mount its troops cheaply unless it assumes most of the risk and expense. Where our people offer \$150 for cavalry horses, other countries pay \$250-\$375. Do you imagine that if our Government would pay such figures as these it would find it impossible to secure 2,000 army horses per annum — or 100,000 for that matter?

Nobody knows — the army buyers themselves do not know what they will buy for army horses two years consecutively. Horses rejected one year go through with a rush the next. How is any one to cater to such a market? If that is true now, what will it be in six years or so, bearing in mind the inevitable fact that cavalry will sooner or later become "mounted infantry?" Stick to the drafter — the horse you can use, can sell, and which as a "gunner" or artillery horse at \$225-\$250 will fill a place on the army picket rope much more surely than any "cavalry horse."

Start breeding this year, if only with one mare. Stick to the drafters, at least until all the countryside is filled with fine, big, upstanding, lusty mares and fillies. Then, if you choose, and only then, experiment with the lighter breeds, crossed upon these worthy dams, carefully watching the tendencies of the times, and anticipating them if you can. A farm without a colt is like a dairy without a cow.

To conclude, then, let us sum up briefly what horse breeding, to be successful, practical, and profitable to both farmer and public in this or any country, must include.

First, we must get big, active, courageous mares of as much quality as possible. Second, they must be of the sort the farmers can use and the markets can assimilate. Third, they must be of one type as near as possible. Fourth, the stallions used must be clean-bred and from the family of which the mares are grades. Fifth, they should be dark-colored, if possible — we are producing too many greys. Sixth, their progeny should be of a sort to handle easily, to do light labor when young, and to mature quickly. Seventh, these youngsters should be marketed as early as possible, any time a fair price offers. Eighth, they should be fed liberally from the moment of their birth. Ninth, no experimenting with all sorts, shapes, sizes, and families should be done. Choose your sort, and stick to it. Tenth, stick to the draft families — in New York State you can always buy a “driver” cheaper than you can raise him — the reverse is true of heavy horses.

MR. HUSON: You will all agree that Mr. Ware has convictions on this subject and the courage of giving them utterance. While we may not all agree with all of his conclusions, his paper here to-day is a very remarkable one, in my judgment, and shows that he approaches this subject from a very broad view-point.

The next speaker on the program, I am happy to announce, is here in person, and he too has had a vast experience along these lines. He is, as you are aware, the editor of the “Rider and Driver,” a well-known publication that fills a very important sphere in the horse-breeding world. He also has had great experience with the show horse, and has acted as the director in charge of the horse show at the State Fair and other well-known horse shows for many years. While his views may not run in harmony with those of Mr. Ware, or with those of some of the other speakers, yet he presents this question as the result of his experience and observation, and is a very intelligent and able representative of the point of view which he will present. It gives me very great pleasure to present to you at this time Mr. Samuel Walter Taylor, of New York.

THE TYPE OF HORSE NEW YORK STATE FARMERS SHOULD RAISE

SAMUEL WALTER TAYLOR, EDITOR, *Rider and Driver*,
NEW YORK.

It would be presumptuous on my part to tell you what is the best type of horse for the farmer to breed. At the same time I feel that I may be able to lay before you some facts and observations that may assist you in determining what horse you may breed with greatest satisfaction to yourselves and profit to your farms. The question is one that you only can answer as it must be considered from so many angles.

I believe that the breeding of horses by farmers for the market must at best be a side issue of the farm, so to speak, and therefore the factor of the horse's usefulness on the farm before going to the market to be sold is of the utmost importance. The force of this conclusion will, I think, be realized when the cost of raising a horse in idleness from birth to maturity is figured as a dead loss. There is no reason, however, why the horse from the age of two years should not be employed on the farm to profitable advantage. You, of course, are well aware that the mare need not be taken out of service except for a very short time prior to foaling. The colt can be broken to harness or saddle at two years of age and gradually inducted into active work, the same as a race horse at that age is trained to win races.

You have heard a great deal about the automobile displacing the horse and the complaint of breeders throughout the country of the lack of markets for certain kinds of animals. As yet, this new condition of things has not seriously affected the draft, or so-called work-horse, but there is no doubt that serious inroads are already being made in that direction.

The driving horse, for the time being, has been practically swept off the highways; the horse for riding in the parks of cities, through the bridle paths and over the fields in the country, as well as on suburban and rural roads, has been increasing and will continue to increase in popularity. That there will be a reaction in favor of the driving horse, I firmly believe.

Such a thing as the "horseless age" is as remote as the millennium; in spite of inflated reports about the automobile

taking the place of the horse, statistics show that there are more horses in the world to-day than ever before and, strange as it may seem, to those who complain that there is no money in breeding horses, prices are higher than ever and horses of the highest types are equally scarce.

The United States Department of Agriculture, under date of January 29, 1913, reports that on January 1, 1913, the total number of horses on farms and ranges in the United States was 20,567,000, valued at \$110.77 per head, with an aggregate value of \$2,278,222,000. Compared with January 1, 1912, horses had increased 58,000; mules increased 24,000; milch cows decreased 202,000; other cattle decreased 1,230,000; sheep decreased 880,000; swine decreased 4,232,000. In average value per head, horses increased \$4.83; mules increased \$3.80; milch cows increased \$5.63; other cattle increased \$5.16; sheep increased \$0.48; swine increased \$1.86. In total value horses increased \$105,528,000, etc.

So far as concerns there ever being an absolute extinction of the horse, let it suffice for me to quote Darwin as authority for the statement that, without exception to the rule, every organic being naturally increases at so high a rate that, if not destroyed, the earth would soon be covered by the progeny of a single pair.

This statement as to non-extinction of the horse is, of course, based upon the assumption that in spite of the enormously increased use of mechanical power, in lines previously occupied exclusively by the horse, the proportionate increase of demands for animal power will more than keep pace and thereby require the horse's continued reproduction.

As a comparison I think it reasonable to refer to the conditions attendant upon the introduction and gradual increased use of labor-saving devices for replacing the labor of man. It may be recalled that, when the first "new-fangled" machine came in, there was almost a panic among many who were dependent entirely upon the labor of their hands for sustenance and, also, that this fear was eventually forgotten.

Without going too deeply into the scientific side of the breeding problem, I deem it pertinent to the subject of the hour to glance briefly at the basic elements to be heeded, if we would achieve



SAMUEL WALTER TAYLOR.

success. We hear much about the doctrine, "like begets like," which has been given the stamp of approval by naturalists of the highest order; but, as freaks and monstrosities have proven, from time to time, it is also true that nature has a will of her own when she wishes to exercise it. It is undeniably true that like begets like, when we have established a breed and type and continued to breed within the range of established blood-lines. But it is not in accordance with the spirit of progress that we should make no departures from this fixed order of conduct, which applies to the breeding of horses with the same force as to every other line of effort in the march of development. It is a paradox, too, to say that like begets like when we realize that the largest horses of the present time have been bred up in size by natural selection, care and feeding, and through the process termed by Herbert Spencer "survival of the fittest," from ponies of the smallest stature — without taking note of pre-historic evolution.

It would be an easy matter to settle the question as to what is the best type of horse for the farmer to breed if any one of the pure-bred types could be pointed to as fulfilling all the requirements of the farm and meeting all the opportunities for profit in the market. This, we all know, is far from the mark. How then are we to reach some composite animal that will meet the comprehensive exigencies of the day?

It is conceded that each of the various draft breeds is a good horse for the farmer to breed, not only for use on his own farm but for achieving a lucrative market. The different types of heavy horse may appeal to the individual farmer according to their characteristics, such as size, weight, color, hardihood and adaptability to the work that he may require. I take it, however, that as the draft horse for the farmer is well known to be a profitable horse to breed, there is another phase of the subject to be treated, else there would be no question asked; and this phrase we must view with consideration for our pockets, not only at the present moment but also with a view to the future.

In my opinion, although I may be seriously doubted, the automobile, as already stated, will eventually make more serious inroads upon the heavy draft horse than it has made upon the horses used for pleasure, general utility, sport and war. There will

then be no sentiment attached to the maintenance of the heavy draft horse and when it is shown that many of his duties can be performed more economically by mechanical power his day of curtailment will most certainly have arrived.

In the meantime, therefore, it seems to me possible to combine the cross-breeding of the heavy draft horse with horses of a lighter type, such as thoroughbreds and trotters, to the end that we may obtain types of horses that will supply the present demand, at a good profit to the breeder, for saddle horses, hunters, army remounts, general utility horses and artillery horses.

Realizing that a proposal to cross a thoroughbred stallion on a Percheron, Suffolk, Clydesdale, Shire or Belgian mare would be regarded as something of a radical departure from the accepted law of "like begets like," I wrote to Mr. Henry Fairfield Osborne, President of the American Museum of Natural History, of New York, seeking his opinion. I wrote as follows:

"Dismissing the economic side of the subject, I am taking the liberty of asking your views on the cross-breeding phase. The experience of some men has shown them, it is said, that the crossing of the thoroughbred (which is the cleanest of all bloods descended from the oldest pure-bred race known) upon the trotting-bred, (which is a decedent from the thoroughbred) has not always proven satisfactory, the usual result being what is commonly called a 'weed.' The idea therefore suggests itself to me that if the hot-blooded thoroughbred were crossed upon its antithesis in breeding, such as one of the phlegmatic heavy draft breeds, the result would be more satisfactory as producing a horse that would be a composite, or medium type between the two strongly opposite types, which would be desirable for use as a docile weight carrying saddle horse, cross country hunter, general utility horse, military charger, or artillery horse, according to the individuality of the sire and dam selected and the individuality of the produce. If you would kindly consider this matter from the view point of eugenics, I should be most happy to quote whatever views you might have."

In answer to the foregoing, I received the following from Professor Osborne:

"In my opinion, crossing with a thoroughbred for farming

purposes is absolutely against all principles of common sense and of good judgment. As a rule, crossing should be with near of kin, and there would be great danger in crossing the thoroughbred with any such phlegmatic breeds as the draft breeds you mention. The result would not be a blend of the good qualities of both, but a mosaic of possibly the least desirable qualities.

“The thoroughbred enters naturally into the hunter and the trotter, and combination with the Arab, which is near of kin, is likely to produce good results. The best horse of the foreign horse breeds is a selection from the entirely different northern horse stock, which has been a draft type from the beginning, related to all the Shire horses of England and the great draft breeds of France. A very long time ago these breeds had a mixture of Arab, which gave them the quality of spirit.”

It seemed to me, at first, like assuming the role of a fool who rushes in where angels fear to tread, to take issue with so eminent an authority as Professor Osborne. I could not dissuade myself, however, from the conviction that his theory is untenable, for if there be any comparison permissible with the American race, which is perhaps the most heterogeneous crystallization of human beings since the beginning of time and if the result of antithetical cross breeding be “a mosaic of possibly the least desirable qualities,” then we are a nation of undesirables.

His statements, nevertheless, did not put a quietus on my investigations and I immediately set to work to look up antecedents for the germ that had gotten into my inner consciousness. With some degree of skill and knowledge, I put my hand upon the writings of Prof. J. Wortley Axe, ex-president of the Royal College of Veterinary Surgeons, and an acknowledged authority on the subject of the horse, its treatment in health and disease, its origin, breeding, training, and management. From him I learned that the English and Irish hunter, which is regarded all the world over as the general utility horse *par excellence*, has descended from just such cross-bred origin as I have described.

As he says, although there are a few horses more sought after than a first-rate weight-carrying hunter, the fact remains that in the vast majority of cases the animal belongs to no definite

breed, most hunters being made up of a thoroughbred sire crossed with a mare of more or less outward pedigree. It is scarcely complimentary to the hunter, he adds, that he should be the only variety of horse whose admirers confess themselves unable to produce him as a distinct breed. On the other hand, the confessed inability of most hunter breeders to work without the direct assistance of the thoroughbred is a testimonial to the value of the latter horse.

Until recently, any sort of mare was promiscuously put to thoroughbreds by enterprising farmers who chanced to try their fortune; and the produce of the union was re-crossed with the thoroughbred or not, just as luck would have it. Professor Axe says this system has no doubt been practiced with varying results in the past as at the present time. He quotes John Lawrence, whose work was published in 1809, as bearing out this cross of thoroughbred and cart horse in Ireland. Others have used the thoroughbred upon all sorts of light mares from the cold mares down.

"Nimrod," another famous authority, admits that a hunter may be put to many purposes in addition to those of the field, as he can carry a man to battle or be used for draft; but he advocates a cross of Arab blood. He went, however, no further into the breeding problem than to lay down for the guidance of his readers that they observe the peculiarities of the horse and mare and cross accordingly — a tall horse to a low mare, etc.

The rooted antipathy which exists to the half-bred stallion affords a very probable cause for believing that the creation of a breed of weight-carrying hunters and general-purpose horses, would not be an exceptionally difficult task. Professor Axe adds, after discoursing upon the advisability of establishing the pure breed of hunters, by more care with respect to the selection of dams, that cart blood may be a capital thing in its way, but asks how about the offspring of a union, if a filly? Unquestionably, he says, the prepotency of the thoroughbred is great but this circumstance gives no guarantee that the cart blood will not assert itself, and until the breeder provides himself with a stud of mares that possess some good back breeding for several generations he must expect some disappointment as a result.

It is my opinion, however, that a well-bred mare of any of

the established heavy draft breeds, if crossed with a thoroughbred, would produce a type of horse for which there is now a demand, not only from wealthy sportsmen of the United States and Canada, but by the governments of every important nation in the world.

I asked Mr. August Belmont, Chairman of the Jockey Club, what he thought of my theory of crossing the thoroughbred with heavy draft mares and he said that a number of years ago he had bred a mare of draft type from upstate to the thoroughbred stallion Count D'Orsay, a son of Kentucky and Lady Blessington, the result being a gray mare 16.1, which he bred to the thoroughbred stallion Nonesuch by the Illused out of a Newminster mare and produced a filly foal that could do three-quarters miles in 1.16 and was a most admirable type of weight-carrying hunter.

I next appealed to Mr. John E. Madden, the well-known thoroughbred breeder of Kentucky, who sent me the following:

"For the army remount the thoroughbred stallion is undoubtedly the horse to use as a sire. This horse should be of medium size and of powerful mould, one whose size should be gauged by the scales rather than by the tape line. This type of stallion, bred to the mares that are available, be they trotters, hackneys, Morgans, saddlers or half-breeds, should give good results.

"For artillery purposes my selection of a stallion would be the standard-bred trotter of powerful conformation, if possible a big horse on short legs. This type of stallion will cross well on mares of various breeds, and especially on the many half-bred Percheron mares to be found in the possession of farmers nearly everywhere.

"In selecting the thoroughbred and standard-bred trotting stallions I have been guided by the fact that racing has given to these breeds a power of endurance and gameness unattainable to others that have not been put to the same supreme test."

Major P. P. Johnson, President of the National Trotting Horse Association, I am informed, has been crossing trotting stallions on heavy-draft mares, with a view to producing artillery and general-utility harness horses with satisfactory results.

The same letter that I sent to Professor Osborne was for-

warded to Dr. David Starr Jordan, to which the following was received:

"Your favor addressed to Dr. Jordan, has been referred to me for answer in his absence.

"In the light of the new understanding of the inheritance of the characteristics of animals and plants, hardly any biologist would attempt to predict the outcome of any particular crossing, even of such well-known animals as horses. The discoveries by experimental work in hybridization have revealed some very interesting and valuable principles, the most conspicuous of which teaches that many animal and plant characteristics seem to be indestructible and unmodifiable. Various characteristics may be combined by cross-breedings, but they cannot be blended. If they are of such an antithetical nature that they cannot exist together in the same individual, then one member of this pair of opposite characteristics will be suppressed, as far as any expression in the body of the individual is concerned, but it will be represented equally with the other in the germ cells produced by this individual. While, of course, experimental work has touched only a few of the many so-called unit characteristics that go to compose the personality of animals, yet the similarity in behavior in inheritance of almost all of these characters that have been experimented with, suggests that many more, probably *most* animal or plant characteristics, may be relied on to behave in the same way.

"However, some traits do blend, and one cannot tell just how a given trait in a given kind of animal or plant will behave in inheritance until one has tried it. It may very well be that the crossing you suggest would result in the kind of type that you desire to get, but probably nowhere else in biologic work is the old adage that the 'proof of the pudding is the eating it' more literally true than in the field of studies in heredity. And as animal breeding depends first and above all else upon heredity, so also must it find the answer to its problems through multiplied experiment.

"The important thing to keep in mind now-a-days, in cross-breeding, is that you are not mating two distinct but modifiable and fusible personalities, but that you are combining two groups

of unit characters or traits. Some of these traits may be able to exist side by side in the offspring, others will be so opposite that one must be suppressed as regards immediate expression. But this one will not have been stamped out, but will be represented in the germ cells of the offspring and will reappear whenever possible."

(Signed) V. L. KELLOGG.

In answer to my letter on the subject of "best type for the New York farmer to breed" Gen. Leonard Wood, Chief of Staff, U. S. A. wrote as follows:

"Referring to your letter relative to 'what is the best horse for the farmers of New York to breed,' I beg to state that I had best speak of this subject only in its relation to the requirements of the army.

"From the accompanying report you get an idea as to what we are hoping to see produced in considerable numbers throughout the country for army purposes. We also believe that if we get good types for our artillery and cavalry, they should be highly valuable animals for general farm work. I shall not go into the relative advantages or disadvantages possessed by the army horse or the regular draft horse in relation to cost of breeding and maintenance, for you can doubtless get that more accurately elsewhere.

"The army requires annually about 2,000 horses, and these are being purchased at varying prices, dependent upon the locality and the additional cost of transportation to stations.

"In Montana and Texas and other parts of the West where horses may pass most of their days, prior to presentation for purchase, on the ranges, it follows that the cost to the Government is less than it would be for horses purchased in New York State. At the present time the officer at the Remount Station in Virginia is securing fairly good 3-year-olds at an average of \$150. Under the breeding system now being inaugurated by the Department of Agriculture, farmers get the use of stallions for a nominal sum, provided they agree to sell to the Government at the price stated above. If, however, the farmer decides that he wants to keep the colt, he then pays for the service at the rate of about \$25. The

price set by the Government must necessarily vary with the local market price."

The Hon. Perry Belmont of Washington, D. C., who originated military races for officers in the United States Army, wrote that the War Department believes the best types of cavalry and artillery horses should also be high-grade farm animals suitable for practically all work.

"The War Department has issued a statement setting forth its requirements for the army horse in which it declares that the galloping horse, the thoroughbred, which has been developed by careful breeding and by racing trials over a period of more than 150 years, resulting in a horse of quality and substance, superior in certain respects to any equine animal that has ever existed, is the suitable sire for the class of horses required by the army. Few people recognize the fact that the average cavalry horse must be up to carrying 267 pounds, assuming that the man alone weighs 150 pounds. The best type of thoroughbreds would make superior cavalry horses, but to secure such in large quantities is not possible. The prepotency of that blood (above that of all other) and the peculiar fitness of the breed for army ends make such animals highly desirable for sire purposes. Mated with good-sized farm mares the results should be fairly good cavalry remounts; mated with the heaviest farm mares the result should be fair to good artillery remounts.

"It is not intended to suggest that only by such means can we get desired results, but it is believed that there is no other way that would give such quick and consistent results. Good cavalry horses should have at least one-half of their blood strains from galloping stock (thoroughbreds). That is fundamental. For horse artillery the same requirement would be wise.

"The principally recognized breeds of this country — standard, Morgan, Hackney, saddle — as is well known, are largely indebted to the thoroughbred ancestry for some of their most noteworthy traits. This fact helps to confirm the opinion that good, big graded mares, almost regardless of predominating strains, when crossed with selected thoroughbred stallions should produce fairly good cavalry horses. The type of sire, however, crossed with good graded mares should give satisfactory mounts, and in

general horses of much farm usefulness. If that policy of breeding were adopted by the farmers in the course of a few years the Government would be able to secure enough young horses of a proper type to satisfy its peace requirements."

The following gives a notion of what is now demanded of the service horse owned by officers:

"Suitable mount (charger) as published in General Orders No. 125, War Department, 1908, is hereby interpreted to mean a horse with a minimum height of fifteen hands, two inches, and with a minimum weight of 1,000 pounds. The horse should be of good appearance and of such breeding and substance as will enable him to carry his owner over jumps of reasonable stiffness, including hurdles, ditches, fences, and other obstacles simulating those which ordinarily would be met in going 'cross country.

"If most of our valuable studs be shipped abroad it is clear that instead of an improvement there will be a retrogression during the coming years. That is a phase of the horse question which especially causes anxiety to the War Department.

"The War Department is keenly interested in the proposition of the Agricultural Department to have Congress enact a law whereby superior sires may be placed throughout the country in suitable districts. By this means farmers and breeders will be able to secure the services of high-grade animals at most reasonable rates, and there will be produced over the country young horses for valuable remounts. This policy is simply carrying out what has been recognized in practically all old countries as a business measure and a necessity.

"If careful selections were made of both sires and dams of thoroughbred animals as regards substance, size, blood lines and temperament, leaving wholly aside the racing question, it is believed that within a reasonably few generations a horse highly useful for practically all cavalry ends would result. It would also be an animal of general utility purposes.

"Cavalry work of the future will more than ever require long, hard service, and at times fast going. Cold-blooded horses are not up to the latter. What is said of the cavalry horse, in a large measure, applies to that of the artillery."

Other letters were received from Gen. John B. Castleman,

President of the American Saddle Horse Breeders' Association, who wrote that "the New York farmer needs a better class of mares and then stallions from which these mares will produce a heavy utility horse; I do not mean the heaviest utility horse but a medium-weight horse that will weigh from 1,200 to 1,400 pounds. This is better for the farmer, good for ordinary uses and better for the artillery service of the United States."

Mr. Fred Pabst, of Milwaukee, and Mr. George R. Brewster of Newburgh, N. Y., advocated breeding the Hackney and Mr. Spencer Borden of Fall River, Mass., recommended the heavy draft horse, preferably the Suffolk.

Now, in conclusion, as intimated in my previous remarks, if it be the predilection of the farmer to breed pure-bred saddle horses it is easy for him to obtain the American Saddle Horse Register and pick out the horses and mares that may suit his purse and breed saddle horses that will bring a large profit; these, however, will be horses that in order to be profitable must be given an amount of training and finish to catch the eye of the buyer and the cost of their keep may also be somewhat diminished by a certain amount of light work. The same applies to the breeding of the light-harness horse — if the farmer desires to breed trotters, either for the track or the road, he should have an eye to the symmetry and beauty of the horse. In the breeding of high-class carriage horses all he needs to do is to consult the Hackney Stud Book; the same with the breeding of thoroughbred saddle horses, either for use in pleasure riding or racing.

What I have endeavored to show is that the crossing of a pure-blooded stallion on farm mares of substance may result in producing horses that will fill the gap existing as to what is most required at the present time. This is a matter both of patriotism and of personal interests.

We may all congratulate ourselves that we are not living in the days of William the Conqueror, the first King of England who attempted to produce a horse especially adapted for agricultural purposes; or of Henry II. who was the next English monarch who made efforts to improve the race then known as the "great horse," by importing large-sized stallions from Flanders and Holland; or of Edward II, or Edward III, or, after a lull

in horse breeding enthusiasm, the days of Henry VIII, as in those days, only mares and stallions above a certain height were allowed to be bred from and the wealthy prelates and nobles whose wives indulged in such expensive luxuries as French hoods or velvet bonnets were compelled to keep stallions of a stipulated size for the benefit of the community; King Henry also requiring that all owners or farmers of parks to the extent of one mile in compass should keep two mares apt and able to bear foals under a penalty of forty shillings.

It was the aim of these monarchs to produce horses for fighting purposes as well as for agricultural welfare. Instead of having such strict injunctions placed upon us, we hope that our Government, while not paternal, may at least see the wisdom and find the means of aiding the farmer to breed horses, either by increasing the price for army horses, which I believe is sure to come, or by some form of premium or subsidy to enable him to maintain a stallion in his neighborhood at a nominal cost.

Mr. HUSON: The address of Mr. Taylor shows that he has given this subject a great deal of intelligent thought and attention, and he has added a great deal to the information which we are gaining this afternoon on this subject.

The next speaker on the program is also a well-known authority, Mr. Sidney S. Toman, the editor of the "*Trotter and Pacer*," which is the organ of the light harness horse. Mr. Toman expected to be here, but informed me yesterday that a business engagement which he could not anticipate and foresee would prevent his being here personally, and he has therefore forwarded his address with the request that it be read. It contains some valuable information on this subject from his viewpoint, and inasmuch as Mr. Cole read the address of Mr. Ware so well, I have asked that he also read that of Mr. Toman.

THE TYPE OF HORSE NEW YORK STATE FARMERS SHOULD RAISE

SIDNEY S. TOMAN, EDITOR, *Trotter and Pacer*, NEW YORK.

I wish to state, prior to entering into a discussion of this theme, that I have collaborated to some extent with others who have more personal and therefore more practical experience than myself. I have no real knowledge gained from

actual experience, of the needs of New York farmers, or the resources of New York farms, though I was familiar with conditions which prevailed in the West during a long residence there, up to a few years ago; and I presume that they are not much different from those which prevail here. In seeking the opinions of other horsemen who are better qualified to speak on the subject, among them Mr. A. T. Stark, proprietor of the famous veterinary specific "Reducine," whom I have long regarded as one of the best posted and most intelligent horsemen in the country, Mr. M. T. Grattan, of Preston, Minn., Mr. M. A. Smith, of Cawker City, Kans., Mr. A. T. Graham, of Carthage, Ill., and other practical breeders and farmers; I have found that the ideas which they advanced tallied in almost every respect with the conclusions I had formed, so I have the more confidence that the suggestions which I shall offer are worthy of your consideration.

As an abstract proposition, I believe the best horse for the New York farmer to raise is the kind that renders him the best service in his own business and the best returns in the market, in case he raises more than he can use.

We may perhaps best reach a sound conclusion as to the question by a process of elimination, weeding out those types which from certain well-known characteristics of cost, conformation, disposition or other features as a breed are least worthy of consideration—until the final analysis reveals the light for which we are seeking. I believe that in this process of elimination, we should begin with the thoroughbred; on the theory that the line of least resistance is the best one to follow. Ordinarily the thoroughbred, as a desirable type for the New York farmers to raise, or as a horse suitable in any way to their needs or profitable production, might be dismissed with scant recognition, but inasmuch as within the past few years a very persistent effort has been made by the representatives of that breed to convince us that the thoroughbred is the sun of equine excellence for almost every imaginable purpose; and the Jockey Club, with admirable altruism has placed some of its most priceless blood at the disposition of our farmers at a merely nominal fee, it may be worth while to go over the situation to see what the thoroughbred has to offer us.



SIDNEY S. TOMAN.

At the very outset we find a very serious objection to the thoroughbred in the reflection that the farm horse necessarily is and must be a harness horse, which the thoroughbred has not been for over 200 years. For all of that long period, he has been bred for one purpose and one only, and that is to run (and of late years to run short distances) under light weight.

Over 200 years of breeding the thoroughbred with a view to enabling him to fly at the gallop, and the incessant grooming and rubbing and polishing he has received to render him fit for the greatest flights of speed; have made him about the most fragile article in the equine kingdom. No other horse has a skin so thin and hair so soft, fine and smooth. There is rarely one that has been trained for any considerable time that does not show saddle marks and abrasions of the skin where he has chafed. Put him in harness where his sensitive skin would be rubbed by the leather in a dozen places, instead of one, and it would be but a very short time before he would be sore from shoulder to rump.

Another thing that disqualifies the thoroughbred for our consideration as a farm horse is the fact that he is incapable of undergoing ordeals requiring strength and rugged endurance. Go to any track where racing is in progress and you will see more broken down and crippled horses than can be found anywhere else. It is rare to see a thoroughbred racing at six years or over. He is as a rule either retired or broken down before he reaches that age — generally the latter. Our thoroughbred friends tell us that this is because he is called upon to put forth so much supreme effort and perform so many prodigious feats in his racing career, but any one who is familiar with the requirements of the work on a farm will find it easy to realize that in comparison, the tasks of the thoroughbred are merely play. He is a very bad walker, and at the trot, going either fast or slow, his gait is defective, lacking the easy knee action of the trotter, and placing him at a disadvantage on plowed ground and in snow or other heavy going. He has very long pasterns, ankles almost round and very small feet, rendering him difficult to keep sound. Still another disqualification of our thoroughbred friend is his temper and disposition. He is what is called in breeding parlance a hot-blooded horse and his temperamental intensity has been ac-

centuated by two centuries of development for the hot and furious battles of his turf career. At the race track he is wrought up to a nervous pitch that renders him almost insane. Every sense is alert with an eager desire to be unrestrained, every muscle and fibre is tense with the excitement of the imminent struggle, and long experience in such ordeals have rendered him, as a rule, fretful, irritable and frequently vicious. He is not a safe horse for the farmer, much less for his boys and girls or the women folks, when they want to ride or drive.

They tell us, however, that we will subdue all this impetuosity by crossing his hot blood upon that of our sluggish farm mares. Concerning that claim I recently read an article written, I believe, by the president of the Washington State Agricultural College, which covers this point. He stated that many experiments had been made in breeding thoroughbred sires to Clydesdale mares with the expectation of getting the conformation and speed of the former and the size of the latter, but that the usual result was an animal possessing the front end of the thoroughbred and the hind end of the Clydesdale. In few cases was the result anything but a nondescript.

Fortunately, we have had some opportunities for observation of this process in our own state during the last few years. I have already alluded to the thoroughbred stallions, which the Jockey Club has placed at the service of the farmers in different sections of the state. Originally there were 71 of these stallions, of which 28 died, seven were gelded, three were returned to their owners, and eight were given to the Canadian Bureau, leaving only 25. Many of them never got a mare, and many more of them that had mares never got a third of them in foal, as is proved by the Jockey Club's own report. The first year there were 500 foals from 4,000 mares bred. Then the number fell steadily to about 350 last year. The oldest of this produce is now six years old. I have never seen any of them myself, but from what I am informed they are just what any intelligent breeder would expect, a lot of worthless weeds of all shapes and sizes, coarse and cheap all over and unfit for any purpose whatever except the wagon of a peddler or a junk-dealer. A well-known dealer in New York City, told me that he had seen, judged, bought and sold many

of the Jockey Club's freaks, not one of which measured up to the standard of an ordinary farm horse; and that he had sold a number as two, three and four-year-olds for sums ranging from \$20 to \$45 apiece. The farmer boys all over the state have sold these skates for from \$20 to \$50 at three years old, anything to get rid of them. I know a man who sold them up to four years old, and by various thoroughbred sires, at all prices under \$100, down as low as \$10, averaging about \$60 for a dozen head. So I think we can safely eliminate the thoroughbred from our calculation. He is not and never was a harness horse, he was never bred for work. He has never been trained for work, he does not know how to work and it would take a long course of breeding, education and development to endow him with the qualities which the farmer demands, either for his own use or as breeding stock.

We come next to the draft breeds. I do not think we need waste any time in discussing the claim of the Hackney and the so-called coachers, as farm horses. In fact, I do not think that any particular claim has ever been made for them for that purpose by their breeders and advocates. Though they are not less qualified for the farm than the thoroughbred, like him they are one purpose horses and that purpose not a serious one in life — largely to gratify a rich man's fancy. The draft breeds have a much better claim upon our consideration, but though no reasonable comparison can be drawn between them, the runner and Hackney for the object we have in view, there are objectionable features to all of them and in one respect they are open to the same criticism that applies to the thoroughbred — they have been bred for many years with a single object and that to attain weight and size. The ton horse is almost the sole desideratum of every breeder of every variety of the draft horse and they have been mated, fed and developed with this main purpose. The English Shire and the Scotch Clydesdale are the main branches of the family and the Percheron, Belgian, Suffolk and other types are but artificial subdivisions of the same breed. They are all much alike in size and conformation, though they differ much in characteristics. I have heard the Clydesdale, Belgian and Suffolk are criticized. Personally I like the Percheron best of them all, and I have seen good results from crossing a trotting stallion on Percheron mares, and vice versa.

One strong objection which obtains against the pure-bred horses of all the draft breeds is the age limit. Few of them live much over 14 years, and it is more difficult to find one above that age than it is to find a trotter older than 25. Probably the reason for this is that everything is sacrificed for size and weight. They are heavily fed on special foods to develop these qualities, and pampered in their handling for the same purpose so much that when subjected to hard work and exposure they succumb quickly. This characteristic is noted to some extent among the grades of the draft families, though in a less degree.

The sum of the objections to the pure-bred draft horses for New York farmers is that they are too large. For that reason they move too slowly, they eat too much and their lives are too short. A New York farmer no more needs an 1,800 pound horse, except possibly as a breeding asset for the market, then he needs a dirigible balloon. The sphere of this type of horse, and the only practicable one, is the heavy traffic of the city, hauling brewery wagons or immense loads for contractors, at a slow pace. There his immense weight and mighty strength gives him an advantage possessed by no other breed. The draft grade comes next for consideration and seems to be the best proposition that we have had. Many practical men regard this type as the very best for the farmer to raise. Mr. Grattan above referred to, an experienced breeder and successful farmer, whom I have long regarded as one of the most intelligent and best posted men in the country in these pursuits, recently wrote me as follows: "For the farmer who wants more weight than the average trotter possesses, the best in the Percheron-trotter cross, originated by that great breeder, the late Chas. A. DeGraff, who was planning just before his untimely death to buy a large number of Percheron mares to breed to a trotting stallion, his experiments in that direction having proved such a grand success. In the thousands of instances since, in this section, that cross has been tried both ways, the excellence of the individuals thus produced has been established beyond cavil. I can furnish names of successful farmers in plenty, who will testify to this, and our farms are like New York farms. My opinions are based upon observation and correct information." Mr. Grattan further says: "The Percheron has

fine feet, clean bone, symmetry, splendid disposition, good constitution, and blends with the trotter to perfection — making a worker of about 1,350 pounds that can do and is able, willing, sound, long-lived and handsome. Many farmers point to such a one and say to me, ‘There is the best horse I ever owned.’ Buyers pay long prices for them when they can get them, but generally they are not for sale.”

Mr. Grattan’s opinion will no doubt be indorsed by many who are familiar with the type he describes; it is interesting to note that he qualifies it with the provision, that it is recommended to farmers who “want more weight.” This raises a question of very great importance — how much weight is requisite for the ideal horse for New York farmers to raise. Without any knowledge of the tasks which the horse is called to perform on the average New York farm, and with only the experience gained from conditions of farming in a western state a good many years ago, which I venture to say were at least not superior to those which New York possesses to-day, I believe any horse which weighs over 1,200 pounds is too heavy for the general purposes of farm work. Unless these farms are more difficult to cultivate than those of the West, a team of 1,200 pound horses will accomplish more plowing, planting, reaping and hauling in three days than a team 300 pounds heavier will in four. The average farmer does not haul a load of more than two tons, and in the present condition of the highways in this state, it would not be at all burdensome for a pair of young, sound, well-seasoned horses, weighing not over 1,000 pounds each, to haul such a load to a market at any reasonable distance, and teams of this character are usually trotting bred.

The horses first used in the New England States and which moved the settlers over the primitive highways into the wildernesses of western New York, Ohio, Michigan and Wisconsin, cleared the land, hauled the logs, broke the new soil and were the mainstay of the pioneers, were horses which possessed not a single drop of draft blood. They were typical of the owners, bronzed by toil, toughened by exposure and capable of the greatest endurance; though sometimes not half fed on the meanest of rations. Yet they lived to the average age of 25 or 30 years and it was rare to find one

that weighed over 1,000 pounds. If you must have heavier or larger horses for your sires you can find them plentifully among the trotters. It would not be at all difficult to place a trotting bred stallion weighing from 1,200 to 1,500 pounds — too large to be a practicable proposition for a racing career in every township in the Empire State, at a price which would bring his services within reach of the humblest farmer. These horses need not necessarily be fast or fashionably bred, or able to beget 2:30 trotters; they need not be registered or eligible to registration; they need not have ancestors noted as great speed-getters and all that they need to possess to be the best available asset in the equine line for a New York farmer, is good feet, bone and conformation, sound legs, kind dispositions and docility, the composite of which qualities is to be found more uniformly in the American trotter, than in any other breed of horses in the world.

It would be a very serious misapprehension of the truth, if any one should conceive the idea that I am advising New York farmers to breed trotters for trotting purposes. Breeding for speed is a specialty and none but the specialists should touch it — even many of these have failed at it. I am simply maintaining that the trotter possesses more of the qualities demanded in a farmer's horse than any other type. There is not one of them that cannot trot faster, as well as perform everything else in the whole range of human necessity better than horses of any other breed.

It is claimed that the trotter does not breed to a type, but it is not true. There is not a single occupation or purpose that has been striven for in his production which has not been realized. It is true that he has been bred mainly for fast trotting, but he can be just as readily a saddle horse, a showring horse, a farm horse, or anything else. He has the most facile intelligence and the most plastic blood of any creature in the animal kingdom. His versatility was never more strikingly manifested than in the New York mounted police, which is easily the most splendidly mounted body of men on this continent and perhaps in the world. The beauty, uniformity of color, size, gait and conformation, and the intelligence of these horses are a perpetual marvel to every beholder, and they are strictly trotting bred, almost without exception. Nobody can doubt that the trotter will breed to a type after

inspecting these horses. I have sometimes thought that the Almighty must have created the trotter as part of a special plan to direct the development of the American people. I hope I violate none of the proprieties when I say that as a nation we are the noblest, bravest, kindest, most enlightened and most progressive people on earth, and I can express my admiration for the American trotter no stronger than to say that he is intensely and characteristically American. He horsed our cavalry fifty years ago and performed feats never before recorded in warfare, he hauled the guns, he worked the farms, and he made New York an agricultural state, for the American trotter has always been and always will be to a large extent the American farm horse. There is no task on your farms that he will not perform ungrudgingly, faithfully, quickly, and skilfully; because he has more courage, better wind, offers greater resistance to heat and cold, has less bulk to nourish, more intelligence, activity, beauty, and all around quality than any other breed offered for your consideration. All the world comes to buy the American trotter because he is the best horse in the world, and so acknowledged by all who are competent to judge and honest enough to tell the truth.

MR. HUSON: The address of Mr. Toman completes the formal addresses this afternoon on this very interesting subject. We have a little time that can be devoted to a general discussion of some of the features of these addresses.

You will notice by the program that Mr. Akin and Mr. Morse have been assigned to lead this discussion. That does not mean that it is to be confined to these two gentlemen; it is open to all of you equally with them. Their names were placed upon the program to start the general discussion because they are both farmers, and I think are both breeders within the State of New York. Now the meeting is yours for a short time at least, and we will all have to be exceedingly brief, for I have no doubt a considerable number of you gentlemen will desire to have a word to say in regard to some of the arguments advanced here this afternoon. As Mr. Akin's name appears first upon the program, I will ask him to take just a little time in defining his view. Mr. Akin.

DISCUSSION OF HORSE BREEDING IN NEW YORK STATE

E. S. AKIN, GLENS FALLS, N. Y.

I believe if a man is going to make a success of any one thing he ought to go at it with a certain point in view. I think the horse for the New York State farmers to breed is the one that will sell for the highest average price on the market, besides doing the farm work, and being produced at the lowest possible cost. I do not believe there is any other breed for the farmer to consider at the present time, unless he has money to throw away on the draft horse. If our farmers cannot raise horses for those prices, besides doing work on the farm, they are not very bright horsemen.

I asked the state breeders three years ago their impression, and I would like to see a vote taken on that to-day; that is, how many men here have bred and grown up and sold a good 1,500 pound horse during the last six months? (Three hands counted.) That, in my mind, shows where we are pretty lame. I claim that we are simply hired men for the middle west, producing the money and letting them use it. Last Saturday I stopped off at Adams County on my way back from Kentucky. The day before they had had a sale of 300 draft horses there; this they have every two weeks. A lot of money is going into that county that I believe should stay here.

We can go still further. I believe that instead of paying the large prices we do in France, Belgium and England for our stock, there are plenty of farmers here capable of keeping a pair of well-bred mares. That money belongs in New York State. The sooner we wake up to the fact that we can produce them with the same feed, the sooner we will get ahead in the cash line.

The draft horse, in my mind, represents just two things — power and cash, and we need them both. At the International this year a friend of mine sold a colt for a thousand dollars. I do not say you can all raise thousand-dollar colts, but it is a long way between what you are doing now and that thousand-dollar colt. I have talked with several dealers in regard to forming a draft-breeders' association, and I believe the officers ought to get together here

this afternoon and take this matter up for our mutual benefit, and for the good of the breeding interests of the state at large. I think more good can be done by combining than by our small individual efforts. I would like to see that taken up, and will be glad to do anything I can to help it along.

J. GRANT MORSE, HAMILTON, N. Y.

The gentlemen who have preceded me have advocated the breeding of about every kind of good horses, so I suppose that you wonder what breed or class of horse I will champion.

Well, I am going to champion the most useful horse on earth, and his breeding is of the very best, for he is bred much as the most of us are. That mixture of a little English, some Scotch or perhaps Welch, a dash of Dutch and a little Irish thrown in just to polish us off, and behold the "Yankee," the most versatile of all men. So my horse shall be a little Arabian, some English race horse, a dash of American trotter and a smattering of wild Indian pony. But all of this must be on his dam's side. For my horse will be even better bred than his master, for his sire must be a pure-bred drafter.

In other words, I advocate the breeding of the horse commonly known as the "farm chunk." The autos may drive the carriage horse out of market, the auto trucks may take the place of the heavy drafter, but the place of the "chunk" is secure on our hilly eastern farms. It is a pretty safe rule to first produce the thing that you can use yourself in your own business, then, if you have a surplus, raise something that you know your neighbors want. We are told that, as a general thing, the farmer gets about 35 cents on a dollar of the consumers' price for what he has to sell, and if you raise a high-class carriage horse, I think you will be lucky if you get 35 per cent. of his real value.

It is a question with me whether it will pay us to keep mares especially for breeding purposes, and but few of us are prepared just now to pay five or six hundred dollars for a draft mare to start with. The mare that we already own, whether she be Hambletonian, Morgan or broncho, if she is worth anything as a farm horse, may be bred to a pure draft sire and be made pay her way right along on the farm and at the same time raise a colt that

will bring from two to three hundred dollars. We can break him ourselves and sell him and get 100 per cent. on a dollar every time.

The skeptical may say that we cannot raise good chunks from such mares as I have described, but we, as breeders of cattle, sheep and swine, all know that the characteristics of the pure-bred animal will predominate when crossed with an animal of mixed breeding. Do not, under any circumstances, use a grade sire. I have been cited to numerous cases of runty colts with heads and feet much too large for their bodies, as being the result of the breeding that I am now advocating; but, upon investigation, I invariably found that the sires of these colts were themselves grades, and of course their blood being of a mixed character, there was nothing to predominate over the mixed blood of the mare, the result being anything that it might happen to be.

Neither would I buy one of the big draft stallions to breed to the class of mares that most of us have. There are a great many pure draft stallions that do not weigh over sixteen or seventeen hundred pounds. One of these can be bought much cheaper than the big "ton boys" can, and I think that they will give better satisfaction in making the first cross.

Probably most of you have read the report of Secretary Wilson regarding the experiments that the Government is making in breeding horses. Among other things he says that at the Morgan farm in Vermont there are nineteen stallions, forty-four mares and six geldings, the latter used as work horses. There were but eleven foals produced. I think that the reason for so few colts was those six geldings used for farm work. An idle animal is generally a poor breeder, and a lot of mares and stallions that cannot do the work to raise what they eat, are a pretty poor lot. At our place, we have a Belgian stallion that passed his first year with us as a gentleman of leisure, and we got three colts to show for it. Last year I put him on the farm to work by the side of a big mare. They drew the sulky plow, the corn harvester and did the heaviest of the work generally. The stallion served 43 mares and I think that at least 35 of them are with foal.

As an illustration of just what we can do along this line of breeding: I bought a branded western mare, a wild broncho right

from the plains of South Dakota. She weighed 1,000 pounds and it took four men to lead her. I broke her in to do farm work and bred her to a draft stallion. I have raised three colts and none of them worth less than \$200 at three years old. At present I have one sired by a pure Belgian that weighed 1,750 pounds. This colt weighed 1,320 pounds at two and a half years old. He has never eaten over six quarts of grain in a day; this winter he is eating but four. These colts are upheaded and lively, and fit to show with a good many pure draft colts.

Do not be afraid to breed old Dolly or Peggy to a good draft sire, and after you have raised some good half-blood mares from her you will be pretty well started. The next cross will make them as heavy as you will possibly want for farm horses, and the third cross you can fat up and sell to the city truckman if he should still be using horses in his business.

MR. HUSON: Now we have a very few minutes more that we can give to this subject, and we would like to hear very briefly from as many individuals as possible.

MR. POWELL: I want to say, in the first place, that I never have heard before more able or better written papers on the horse question than we have listened to to-day, and each one, I think, has convinced us that his paper was right. If we have taken our friend from Minnesota, and the paper that followed from Massachusetts, we would all be breeding draft horses; if the others, we would certainly want the thoroughbred; and, following that, if we had taken the last paper, we would all be breeding trotters. Now it seems to me we should digest those papers and each one take his own opinion and see what is best adapted for our own farms. We cannot measure our conditions with those in the West, nor those of hunters or army or other purposes. For the best conditions on the farm, it does seem to me that we want horses that will work, horses that will do the drudgery, to bring the agriculture of New York State up to the standard where it should be; and that horse, it seems to me, without a question, must be a draft horse, or a cross from some of these other horses that have been so highly recommended.

MR. CAMPBELL: I am not especially a breeder of horses, but perhaps what I say might be of some interest to you. We have

tried the hackney, but it was a failure. A few years ago, after the depression, the high prices offered and the demand has been so great, that during the last five years a very large number of Clydesdale mares as well as stallions have been imported from Scotland. I wrote to a dealer and he offered a beautiful filly, and I gave \$330 for her. A few months later she dropped a filly foal, and later a grade gelding. That grade gelding would sell at \$215. That mare has produced offspring that would sell at \$200 or \$300 and has won first prize in one class and second in another. That shows you what can be done in a country close to yours — only the lakes between us. A neighbor sold a grade gelding for \$260. Right along they are selling at \$225 up to \$300. These mares are doing the work, and this year this same imported mare produced a beautiful stallion colt and did the work of the farm. I believe to-day that the use of the Clydesdale stallion — start with the small one, the snappy one, and then use him from 1600 to 1700 pounds, and I think the people of the State of New York, as well as we of the Province of Ontario, will make a profit.

MR. HUSON: If there are no further announcements to be made we will stand adjourned until to-morrow morning.

Meeting adjourned.

THIRD SESSION

THURSDAY MORNING, JANUARY 23

Meeting called to order 10:30 A. M.

MR. HUSON: The first address on the program this morning is one, I am sure, that will prove of great interest and profit to all of us, and I have great pleasure in introducing to you Mr. M. S. Nye, of Preble, who will discuss for a time the "Fitting of Dairy Animals for Show."

FITTING DAIRY ANIMALS FOR SHOW

MR. M. S. NYE, PREBLE, N. Y.

Certainly it ought to be a pleasure for anyone to say a word about the dairy cow, for she is a most useful animal. It is only right and proper for one for whom the dairy cow has done so

much, as she has done for me, that he should at least say a few words to help her along.

And I feel it fitting in showing cattle mainly of one breed — but it is possible that in the fitting of other breeds there might be some things that would want to be a little different than it would with the breed that I represent — I think the most important thing of all is the growing and developing of the animal. I do not believe that any animal not properly grown and developed would make a first-class show animal. Not only that, but there are a few people, quite a lot of breeders, who do not believe it is worth while to fit animals to exhibit in the show ring. But the growing and developing for the largest possible production; for the show ring; for the auction ring, and also to sell at private sale, all come under one head — the proper growing and developing.

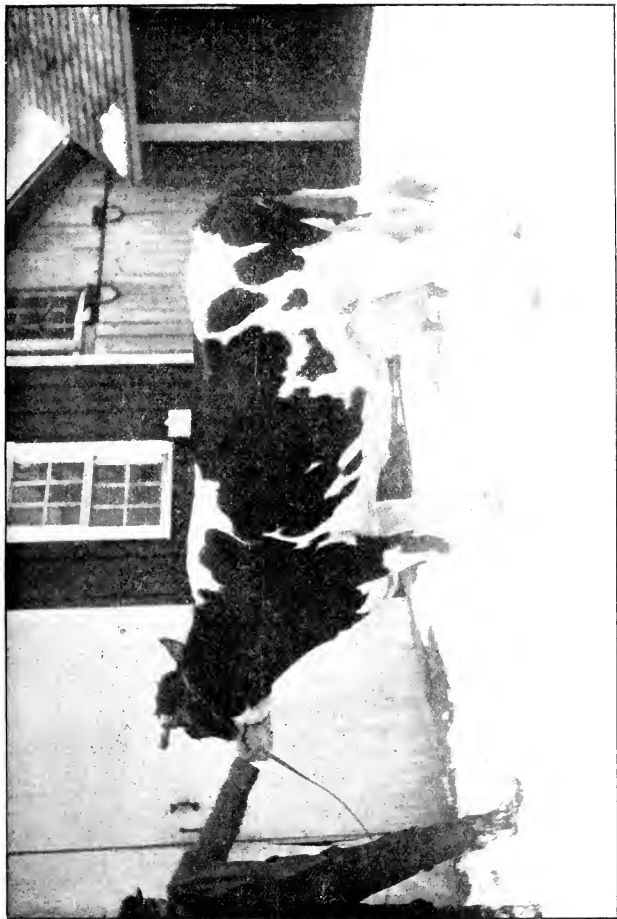
It may be best for us to begin at the birth of the calf. That is my idea of where we ought to begin the development of the animal for the show or for the largest possible production. My way is, when the calf is born, when it is a few hours old, to take it away from its mother, and to give it not over a quart of its mother's milk three times a day for at least a week. A good many breeders think it best to let the calf run with its mother for a few days. In the olden days when the cow was raised in the winter, they kept her for a few months on straw, etc. She did not make up such large udders as now, and she did not fill her udders with milk.

In the last twenty-five years I have lost only two calves with the scours. I get a good many letters every year asking what is good for white scours and other things, and believe the trouble is that nearly all the breeders either overfeed their calves or let them run with the cow and give them all they want. In the last three or four weeks we have had six or seven calves with scours, but every calf is now doing fine. I always disinfect the navel immediately after they are born, and keep doing it every day for a week, with a solution of carbolic acid. The way to develop the calves properly is not to let them have any set-backs; grow them in such a way that they will never get poor. After they get to be a week old, if they are all right, I begin on their milk,

and do not give them any grain until they are at least four weeks old; then I use equal parts of corn meal and start very light with that, putting it in with the milk. I always keep some clover hay before them, and the dry grain that I give them is usually ground oats and bran. Calves ought to be kept in a box stall, so that when you go in to look at them they will raise up their heads; that will drop their back down and square them down behind. And I think the most important of all is the growing and developing the female until she has the first calf; if she is well grown and in fine condition when she has the first calf, she will develop a nice udder and make a better showing in the show ring, and prove a great deal better producer than one which, some time in her life, has been scrimped for feed, and has become real poor. I do not think she will ever do what she would have done if she had been kept growing from the time she was born until she was matured. Of course with a dairy animal, to make her the most profitable for a milk producer, we do not want to wait until she is seven or eight years old, but by growing her fast, we can just as well make her a very large producer at three or four years old.

After we have them properly developed, the way that I usually do in getting them ready for the show ring is to let them run in a pasture, if I have plenty of feed, without any grain, until the middle of July or the first of August, and then I bring them home and keep them up daytimes with a blanket on and let them out nights. I think they are in better shape that way than when kept in the stable night and day; it keeps them used to exercise, and I think running out through the summer agrees with them better than to tie them up entirely. In the daytime we usually feed them clover hay, and the grain ration is one part oil meal, one part hominy, one oats and one bran middling. Feed liberally so that they will be gaining very fast at the time you get ready to show them.

Of course it is necessary, in order to get up a good show herd, to have at least two fresh cows about the time of the fairs — to have two three-year-olds and two two-year-olds; and the yearlings I would rather have not fresh, so that they begin to keep back something. And the grooming — I never let anyone take a curry-



LUTSCKE DROSKY CORNU AT SIX YEARS. THIS COW GAVE 121 POUNDS OF MILK IN ONE DAY; 28.38 POUNDS
OF BUTTER IN SEVEN DAYS. FIRST PRIZE NEW YORK STATE FAIR, 1902-3. M. S. NYE.

comb to groom. You see at these ages the hair is usually short; the hired man will forget and bear on and make it rough. But use brushes and woolen cloths, and brush them off every day, and to put on the finish rub them with your hand; that will bring out the gloss. Just before we show them—about two days usually—we wash them with soap and water, and then put on woolen blankets. That gives one the day before the show to rub them and get them in proper condition. The horns, of course, ought to have quite a lot of attention. I usually scrub them first and sandpaper them, and then use emery cloth.

One very important thing is to have everything clean, and have your men, before you go to a fair, lead them out and teach them how you want them—hold their heads up in good shape and keep their feet standing square; and if they are well rubbed and clean, it does not make much difference how much excitement there is, the cow will put her confidence in you and make very little trouble. I find kindness at all times, with well-bred stock, is just exactly what everyone ought to use.

I have a few samples here of animals grown and developed the way I have been growing, developing and fitting, and while they all represent one breed, I want other breeders to excuse me for showing the animals all one color. Some breeders have an idea that the show animal is not a great producer; that naturally the first-class show animals are not the best producers. I think that is all wrong. I think a cow that is straight and square, and has a nice square udder is naturally just as good a producer, and is an animal that anyone would not be ashamed to show in a ring. If all breeders would consider individuality as well as production, I think they would be much better off. While I admire all breeds, yet nearly all my experience has been with one breed; so I want other breeders to indulge me while showing a few samples of animals I have grown and developed of a single breed.

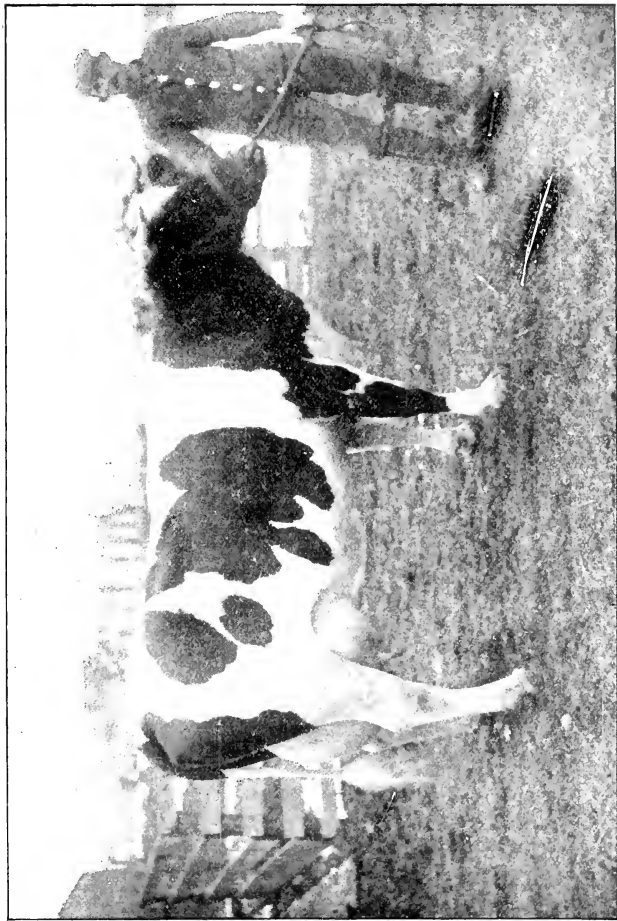
And in order to help out the judge a little—some people have an idea an expert judge can actually tell very little about whether a yearling heifer or calf will ever make a heavy producer—as I go along I will call the attention of a few judges who have judged heifer calves and yearlings and two-year-olds to certain points, and then give the official records made to help out the expert judges.

Here (showing photograph) is a heifer calf seven months, weighing 600 pounds, which won first prize. To show him the individuality can be handed down for one, two and three generations, this calf's dam, as a calf, won three first prizes and three championships. It is necessary to have a calf quite fresh for the ring. Her udder was probably about as large as a three-quart measure.

Here (showing photograph) is a yearling heifer at the New York State Fair a few years ago, that the judge gave first prize to over all females under two years old, and he says "If that heifer don't make a good cow the man behind her will be blamed." Here (showing another photograph) she is at four years old. Made an official record of 26.18 pounds of butter in seven days. And this cow was good enough for the Canadian Government last August — gave \$2,000 for her — and the judge who came down from Hamilton is now President of the Holstein Association of America.

Here (showing photograph) is a heifer a year and eleven months; weighing about 1,200 pounds; well developed. Of course she did not have grain all her life; all summer, or for about three months before we showed her at the fair, she was fed grain. She won second prize at the New York State Fair; calved at a year and eleven months, and made an official record of 22.4 pounds of butter in 7 days; 72 pounds of milk in a day. As a three-year-old she made 118.3 pounds of milk in a day, 3,100 pounds in 30 days; 27 pounds of butter in 7 days. You can see great individuality there. She has good breeding and is a first-class show animal. Now how much more that animal is worth to be that kind of an animal, than she would if she sloped off behind, had an uneven udder and other undesirable qualities. I think that if the breeders took more pains with individuality, and never kept a herd sire unless he were a good, reasonable individual, our breeds would be improving all the time, instead of perhaps some of them going the wrong way.

Here (showing photograph) is her half-sister — the same sire — fitted for the show ring. Picture taken on the New York State Fair grounds. She has been grand champion of the New York State Fair for three years. It is very seldom that one animal is grand champion at any fair for three years in succession,



DROSKY SADIE VALE DE KOL AT FOUR YEARS. CHAMPION AT NEW YORK STATE FAIR AS YEARLING. SOLD TO CANADIAN GOVERNMENT AT SIX YEARS FOR \$2,000 BY M. S. NYE.

and this heifer, if nothing happens to her, will be on exhibition next year at the fair. She has never been beaten in any show ring. She has a twin sister that a good many people think is fully her equal. The other twin sister has a record of $22\frac{1}{2}$ pounds of butter in seven days. This heifer has always calved at fair time. She also won the butter test when she was three years old.

Now I will show a nice individual heifer, and then her full brother. This heifer (showing photograph) is one that has seven world records, one for butter and six for milk. Here (showing photograph) is her brother that won three first prizes as a calf, and last fall, as a two-year-old bull, won first prize at the New York State Fair. So if you take pains to secure individuality, I do not see why you cannot raise a heifer that will do the same kind of work.

Here (showing photograph) is a cow, the daughter of the first cow that I ever owned. The question in my mind is whether, because of having a little show blood in my own veins, it was not due to that fact that I was so successful in picking out a foundation cow that would raise as good a daughter as this.

I would like to say just a word about writers for newspapers. This cow won the prize at the State Fair for seven years in succession. One newspaperman in describing her, called her the "Great Beauty." Another correspondent said of her, "She is a straight, nice cow, but her teats are out." Of course he wanted to show people that he was a judge, and find some fault with her. Nobody, I think, ever saw a finer udder on a cow than that one. The question is whether as nice an individual as that is a great producer or not. It might be best to say just a word about her breeding. Now this cow, after she reached 11 years of age, made a record of 28 pounds of butter in 7 days, 112 3-4 pounds of butter in 30 days, and her sire is a brother to the sire of "Bastine Belle," the world's champion for a year. Now the question is whether we can produce good individuals and have them produce the top notch, and have them well-bred. If we can we have certainly something that will stick by us.

Just another word about the judges. This animal (showing photograph) was judged after she had her second calf. They looked her over and looked her over. Finally one of them said,

"I think this heifer is poor." I said, "She has just had her second calf, and was not dry at all." They put the first prize on her right away. Now this heifer, about four weeks ago, was a six-year-old, had four calves, and has never been dry; produced in one day 121 pounds of milk, 27.34 pounds of butter in seven days.

Here (showing photograph) is an example of handing down show qualities. The grand-dam of this cow was Grand Champion at Toronto. The dam of this cow won four first prizes and four championships as a yearling. She has a record of 21½ pounds. A little later, I will show the sire of these animals.

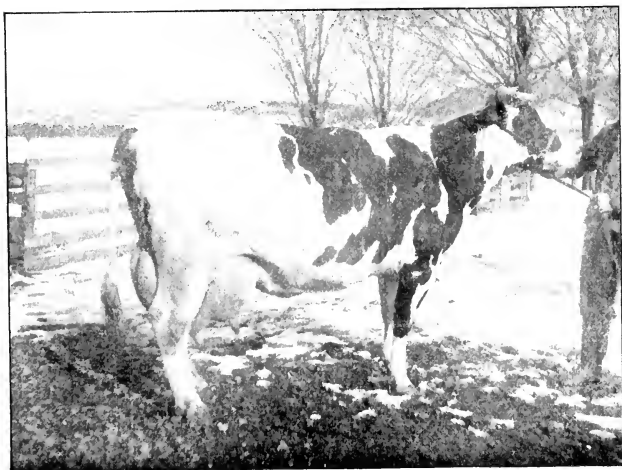
Mr. Burchard, one of the oldest breeders in the United States, gave this heifer first prize and champion, as a two-year-old. Now the question is whether that old gentleman could see, at that time, a cow that would develop like this. This was taken just a few weeks ago, at eight years old. This cow, last year, after giving 20,000 pounds of milk, produced, a year ago now, 95 pounds of milk in a day, and 25.7 pounds of butter in seven days. The cow weighs 1,600 pounds. She is a full sister to the dam of this heifer (showing photograph).

Now I show the sire (showing photograph) of all these animals I showed you, except one. This bull won first prize in New York State for five years, first prize for two years at Ogdensburg and other county fairs. Of course we thought he had a lot of individuality. Somebody will say, "He is a nice show bull, but how is he bred?" It is unnecessary to say anything more about him.

There was something said here yesterday about seven-day records not amounting to very much, and thirty days not to very much either. Now to help us out on the seven-day records, I will show you a copy here (showing photograph). This old cow was in the show ring seven years. She is fourteen years old now, and we milked her eleven years every day in the year—never could get her dry. And when she was nine years old she gave us twenty-four pounds of milk a day without going dry. She produced a son that sired this cow (showing photograph). I will say just one word more for the judge. The assistant professor of husbandry of Cornell scored this cow; she scored 92½. She made



DE KOL PAUL CORNUCOPIA AT ONE YEAR AND ELEVEN MONTHS. SECOND PRIZE YEARLING AT NEW YORK STATE FAIR. M. S. NYE.



DE KOL PAUL CORNUCOPIA AT THREE YEARS.

a record, the third month after calving, of 33.1 pounds of butter in seven days, the largest record made after calving. In that you see a nice individual and a great producer for seven days, giving 136 pounds of butter in thirty days the third month after calving.

Of course some people might think a little bit larger record than this from a cow that was not half as good an individual would be the most desirable, but I feel that I would rather have a nice individual like that, with a nice, square udder, and not quite as large an official record, than to have one a little bit larger and no individuality.

Now this cow, in order to show how even she milked from her front and hind teats, we had her milk weighed. When she gave 100 pounds of milk in a day, she gave 48 pounds out of her front teats and 52 out of her hind.

I ought to say just one word about color. I think that some breeds, especially the Ayrshires, are being improved by breeding light, but I am afraid that the Holstein men are breeding for color more than they ought to. I think we should, all things being equal, take color perhaps into consideration, but I would not feel like letting that predominate, because the individuality of the animal, and the record, ought to go away ahead of the color.

I think that I never—unless it was a bull—lost anything by color in the show ring. I think that perhaps color might have some weight with judges. I know a good color is a good quality, but of course any of these colors are eligible—one is just as eligible as another.

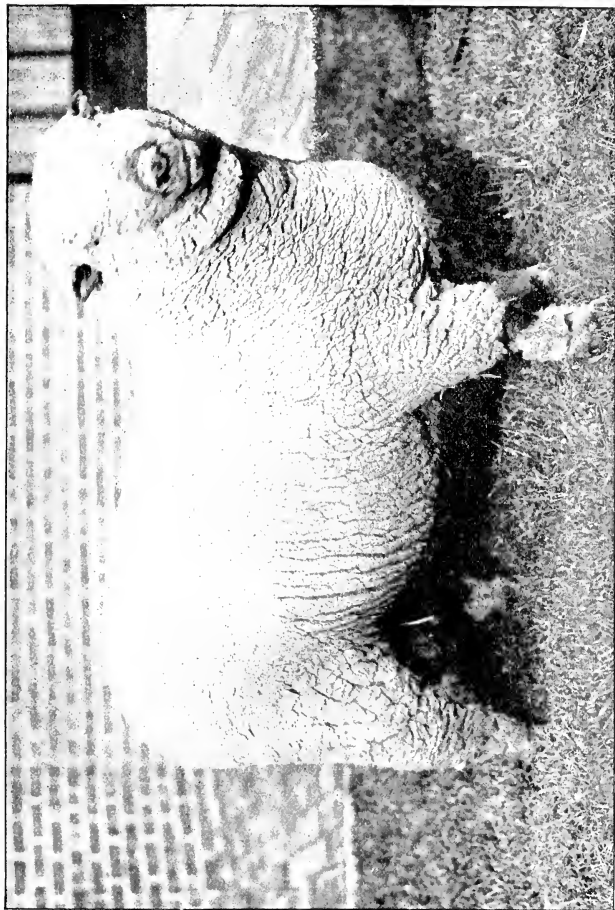
I want to say just a word about whether it is worth while for breeders' associations to help along the people showing cattle in the show ring. There are quite a number of breeders who do not believe it is worth while to encourage showing cattle at fairs. Down at Brockton they only show four dairy breeds; they have a brand for each breed. They generally have about 500 or 600 head of cattle, and in 1910 they had about 100,000 people there. Just supposing, for instance, there were no Holsteins there—would they not feel as if the Holsteins were giving out—or any other breed you might take up? And last fall, at the New York State Fair, I was knocked out in the first round, so that I could not lead any

cattle in the parade or anything, so I sat there and saw the cattle go out on parade. And a greater sight I never saw in my life — to see those animals — I guess probably about 800 went out on parade — all breeds represented; and it would not be necessary for me to try to tell those fellows anything about fitting their cattle. Of course what little I have said here to-day might help somebody along; but every animal there was well groomed — straight, nice animals generally — nice, square udders, and their coats shone like silk. And I wondered to myself if they had ever had such a show as that before. It was a wonderful sight. It took them about an hour to pass one point. And the question was in my mind at that time, "What effect would it have on the New York State Fair if there were not any cattle there at all?" It does not seem possible that the New York State Fair could do without them.

I think there are just a few things that the New York State Fair will have to do in order to keep all of those good cattle at the fair. I hate to criticise the Commission at all. Of course, as far as I was concerned, it did not make any difference; but for those fellows who could not bring anything with them to have to pay 45 cents a bale for shavings, and at the rate of from \$30 to \$40 a ton for hay — it certainly was not right. And for cement floors it takes a lot of bedding. I think the Commission at least ought to furnish the shavings for bedding and that they ought to furnish the feed at a reasonable figure. At Brockton they furnish all the hay, grain and bedding, and you can see what a great fair they have there.

I thank you for your attention, and I hope that I have not said anything that will in any way make the other breeders feel as if I had not done justice to their breeds. I want to say one word about the Ayrshire breed. I noticed them at the New York State Fair, and thought I never saw a breed of cattle that has improved so in the last few years as they have, in individuality and in color; and in fact every breed looked finer to me than it ever looked before.

I think that is all I have to say.



WARDWELL'S MORTIORTUS. WON: 1910—1ST GET OF SIRE AND PETTIFER CUT, CHICAGO; 1912—1ST AND CHAMPION OF NEW YORK.

MR. HUSON.—This address of Mr. Nye cannot help but be profitable; it has been instructive, for it comes from a man who has done the things he talks about on his own farm. His reputation as a breeder of very large producers, as well as show animals, is well established throughout this country.

We are now going to take up the subject of "Fitting Sheep for Show," and hear something about the neglected sheep in the State of New York. Mr. Wardwell, whose name is familiar to every man interested in animal husbandry throughout the state and the country, has come here this morning at our earnest solicitation, at a great deal of personal inconvenience to himself, to meet you and to discuss this subject a little while with you; and it gives me very great pleasure, I assure you, to introduce at this time Mr. Henry L. Wardwell, of Springfield Center.

FITTING SHEEP FOR SHOW

HENRY L. WARDWELL, SPRINGFIELD CENTER, N. Y.

I have been asked by your committee to talk to you about "Fitting Sheep for Show." I am, therefore, going to give you my ideas of starting and maintaining a breeding flock.

The first requisite is to make up your mind which breed of sheep you will start with, which breed is most suited to your environment, and which breed, properly handled, will put the most money in your pocket. Having made up your mind on this point you should study the characteristics of that particular breed, establishing in your mind's eye the type and quality of breed you are going to develop. You must have a high ideal, you must be an enthusiast, and you must not be contented with mediocre success.

There is no better way to study type and character than to attend our state fairs and watch the judging; that is what the fairs are for—to educate. You will find this intensely interesting, and you soon will be looking over the class being judged and endeavoring to anticipate the judge in his selection of the winners. If you give the matter close attention you will in no time be able to pick the winners.

If you find yourself making a mistake and picking the sheep that went third instead of first, as soon as the judging is over you will dart into the ring to feel their backs, their quarters, and examine their fleeces to see what hidden defect has caused you to make a wrong selection.

You are paying this close attention because you are interested in the game, you want to become as good a judge or better than the man who has been chosen by your state fair committee to place the ribbons. Why? Because you have been studying the type and quality that you may start successfully a flock of your own.

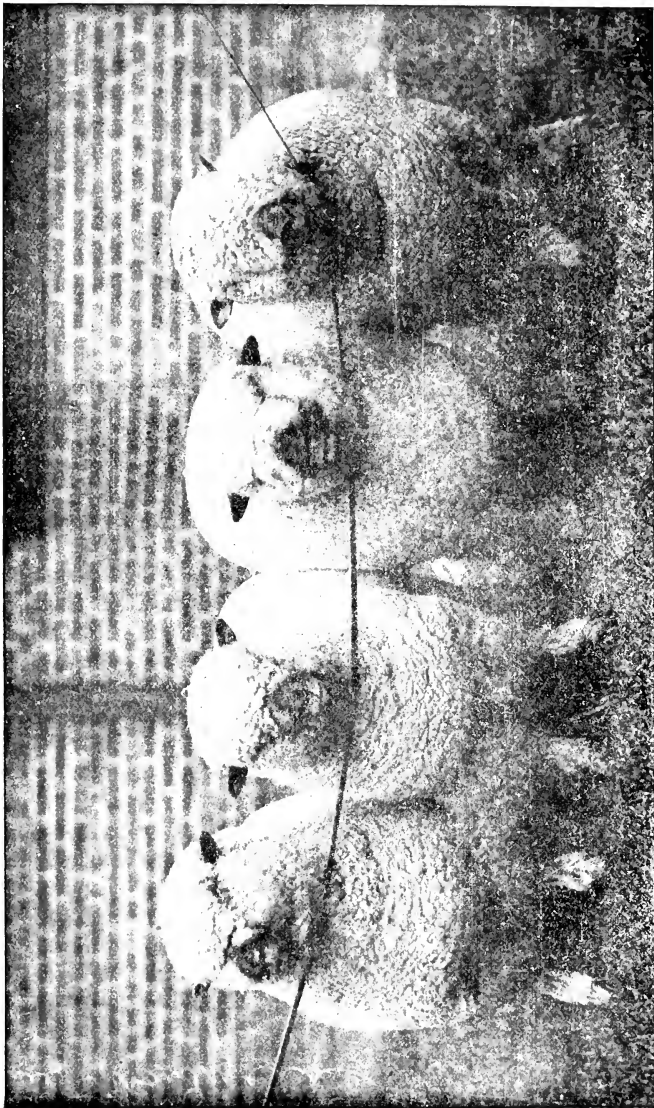
Having convinced yourself that you now know something about this important matter, you are ready to start the founding of your flock. You have already established in your own mind who are the most successful breeders, from a show consideration. Now you should visit the leading flocks and see the sheep at home. You should examine them carefully and see if the breeding flock as a whole is uniform and if it shows the type and quality you have in mind.

You may not have a large amount of money to spend; if not, content yourself with a fewer number of animals. Do not stand on price in starting a flock but buy the best you can find; not that you are going to be satisfied with the result that this man from whom you buy has attained,—life is short and he has spent many years in reaching his position; years saved to you, and you can go on from this point and achieve even higher results.

We will say that you are going to buy twenty ewes to start with. Do not buy five here and five there; better get twenty ewes from one flock, they will be more uniform and you will get better results in breeding. In selecting your ewes go to a man who not only pays attention to type and character but also knows the blood lines of his flock.

You now have twenty ewes to start with. Even greater care should be given to selecting your ram, bearing in mind that the ram is considered in breeding, half the flock, and upon the result of proper mating will depend the future success of your endeavor.

Now, having gathered the flock, we must go back to the farm and attend to this breeding proposition. Having spent so much effort in selection we must see that these valuable animals have the proper care. Many people buy sheep as a side issue, because they return more for the money spent and the cost of care given them than any other branch of live stock, because they will clean up the weeds and because there is no other animal that will increase so fast the fertility of the farm and make it produce



FOUR LAMBS, GET OF ONE SIRE, BREED BY H. L. WARDWELL. WON: 1ST OPEN AND AMERICAN CLASSIC, NEW YORK STATE AND INTERNATIONAL, 1912; PETTIFER CUP, INTERNATIONAL, 1912.

larger crops. But our proposition is a different one. On my own farm we are breeding sheep to found other flocks; we are breeding rams to head other flocks and make them more valuable, and in order to convince the world that they are top notchers, we have to show them, and we have to fit them for show. Therefore we give them the best surroundings and the best care and feed.

Sheep should not be crowded and kept in ill-ventilated buildings when they have to be housed. They should have proper food and plenty of exercise. During the winter our ewes are kept in the barn or sheds at night, but their hay is given them in racks that are a short distance from the barns and in the open lot, to induce plenty of exercise.

We find that we can do best with early lambs. When our ewe drops her lamb she and the lamb are put in a small pen by themselves for three or four days, until she thoroughly knows her lamb and the lamb knows its mother; then they are turned with the rest of the flock. We partition off a small part of the barn in which the lambs may go and the ewes cannot. The lambs run back and forth, to and from their mothers. Before the lambs we keep some ground oats and bran with which we mix some crushed oil cake, and, as the lambs get a little older, some sliced mangels and turnips are added. On this food they thrive and grow fast. It is our idea to keep them growing all we can from the time they are dropped, especially those we are fitting for show.

Their mothers are now given a grain ration twice a day, about a handful each of a mixture of oats, bran and cracked oil cake, with some sliced roots, which increases their flow of milk. Lambs dropped during January, February and March, with this care, should average from 80 to 110 pounds each by the first of July, and be ready to wean. I think we lost one lamb this last year up to the time they were weaned. After that we lost two ewe lambs killed by dogs, and one other ewe lamb that died a natural death.

When we wean the lambs we turn the mothers on the poorest and driest feed we have and the lambs on new seeding or a clover or alfalfa aftermath, and continue our grain ration.

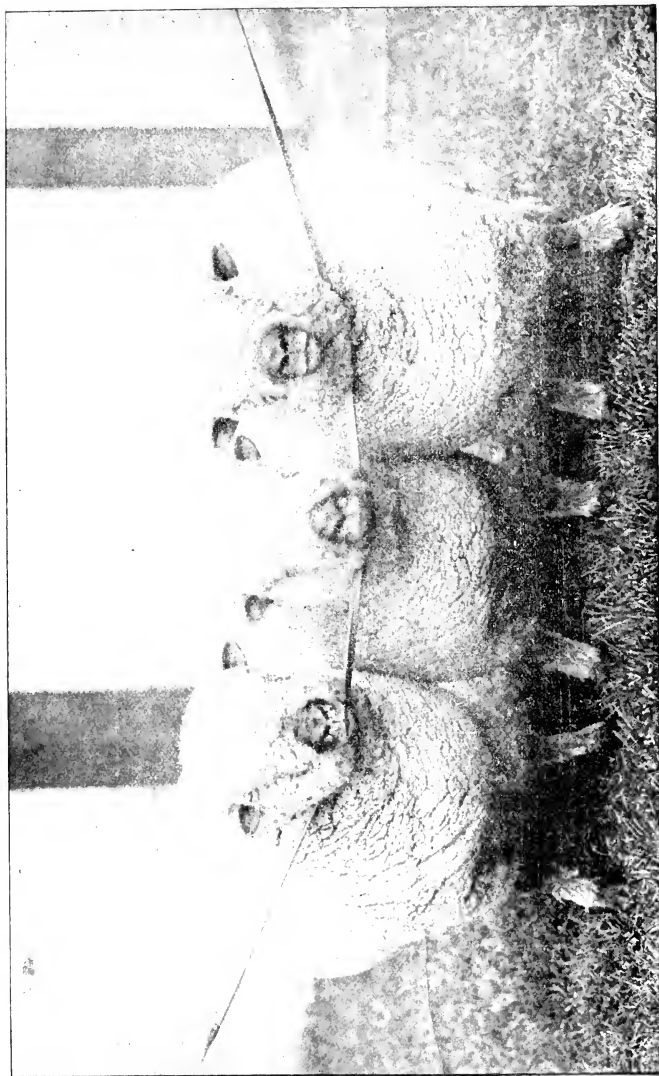
Heretofore I have had lambs die of bloat when turned on alfalfa, but this year, thanks to Mr. J. J. Brown, my superintendent, I tried the following plan: We chaffed some alfalfa, cutting it up about one-quarter to one-half inch long. To three bran sacks of this chaff we added 100 pounds of bran, and two bushels of oats, and our lambs had half of their ration early in the morning and the other half at night and ran at their pleasure in an 18-acre field of alfalfa from which we had already taken the first crop. I never have seen such a healthy and thriving lot of lambs — eyes bright, fleeces right, no scouring and growing like weeds.

About the first of June we select our nicest lambs, our best yearling ewes and rams, to get them in condition to show. We have started our root crops long before this — our peas and oats, to cut when in the flower for green feed. Our aim now is to have them in the pink of condition for the fall shows. We find that we can give them all the green peas and oats, cut clover and sliced roots that they will clean up nicely, three times a day, but we have to be very careful about the grain feed, of which they need very little.

We find that the Shropshire (I cannot speak so well of other breeds) is prone to get too fat, particularly if the grain is not watched. We do not want our sheep flabby when they go in the show ring, we want good, firm flesh, and the great thing in fitting to avoid this flabbiness is constant exercise. Keep them in the open, not in barns, shelter them from the storms if you will, bring them in possibly at feeding time, but keep them outdoors as much as possible. Be regular in your feeding and see that they have plenty of good water at all times.

They should be dipped early, when shorn, and again one month before showing, but do not cut them or trim up their fleeces too early. Keep them in their natural condition and bring them into the show ring active, with clean, smooth fleeces and bright eyes, pink skins and well-covered backs, all of which can be done with the proper, regular feeding, and above all — exercise.

I want to say one thing more — about keeping up the quality of your flock. If a man is keeping forty breeding ewes I think



THREE YEARLING EWES. WINNERS OF SAL-VET CUP, INTERNATIONAL, 1912. BRED BY H. L. WARDWELL.

he should add ten yearlings to his flock each year and cull out about ten of his oldest and poorest ewes. He should never breed his ewe lambs as lambs, but should keep them over until the following autumn and then breed them. This will give him stronger and better sheep. In my own flock, in the fall—say in October or November—I go carefully over my ewe lambs and pick out 25 or 30 of the best of them, taking their numbers. The following spring, just after shearing time, I go over them again to be sure that I am right, and then I select the best of these, pick out about 20, which I keep to add to my flock. All of the ewes that have been so selected are never priced, and in fact would not be sold to a buyer no matter how much money he would pay for them.

The man who does this will find that his flock will gradually improve in quality and will soon be all tops, while if he pursues the opposite course and sells his best ewe lambs or yearling ewes and keeps the worst, he will soon find that his flock is so deteriorated that he will be disgusted with them and give up keeping sheep.

In regard to rams. Only the best should be selected in the same way and the poorer lambs should be castrated. I should say that at least a third of the output should be made into wethers. The rams coming from a flock so managed will be good in character and will advertise the flock, as a pleased buyer will not only come back again but will tell his friends of his purchase.

MR. HUSON: I know you all feel very grateful to Mr. Wardwell for this very instructive and entertaining address. I wish time would permit a general discussion, not only of Mr. Wardwell's address but that of Mr. Nye; but we are behind somewhat on our schedule, and it will be necessary for us to take up the next address, which is a very important one to all of us engaged in breeding of animals. The subject is "The Principles Underlying the Control of Infectious Diseases of Animals," by Dr. Moore, Dean of the State Veterinary College at Ithaca.

THE UNDERLYING PRINCIPLES IN THE CONTROL OF INFECTIOUS DISEASES OF ANIMALS

DR. V. A. MOORE, DEAN STATE VETERINARY COLLEGE,
ITHACA, N. Y.

When Commissioner Hinson invited me to speak before this association, it occurred to me that perhaps the most helpful thing that I could do would be to discuss the essential facts and underlying principles in the control of infectious diseases of animals. Few of us realize the enormous loss to the live stock industry because of infectious diseases. Professor Willcox estimated a few years since that bovine tuberculosis costs this state \$5,000,000 annually. Dr. Williams in a recent report of his studies of cattle diseases places the toll from infectious abortion and sterility in cattle at from 5 to 10 per cent. annually. Glanders in horses, anthrax, rabies and hog cholera each exact a heavy toll from the live stock owners as well as from the state treasury.

For many centuries this class of diseases was viewed with mystery. At the present time infections are considered by many stock owners as misfortunes entirely beyond their power to prevent or control. The reasons for this are not difficult to explain, because as yet our people have not learned to study the habits or to follow the life history of invisible microscopic organisms that prey upon higher forms of life.

With general diseases due to improper care of the body it is easier to understand that there is a direct relation between cause and effect, although with these there is still much to be learned. The infectious diseases, however, present a different phenomenon. They are the direct result of the invasion of the body with certain definite living plants or animals. They are to be likened to a crop of grain, which is the direct outcome of the planting in suitable soil of the seed of the crop desired. As the sowing of wheat in suitable ground gives rise to a crop of wheat, so the sowing of the bacteria of anthrax, glanders or tuberculosis into the tissues of the animal body will give rise to those diseases.

The facts that are necessary to understand the appearance, course and disappearance of any given infectious disease pertain largely to the germ producing it. The external world is literally

permeated with living bacteria and protozoa. It is supposed that each of the many species has some duty to perform in nature's economy. Bacteria are the universal scavengers. They cause all organic matter to revert to its original elements, they cause fermentation and store up nitrogen in the soil. Of the many species of micro-organisms a few are able to multiply in the tissues of the living animal body. Some of them do not seem to exist naturally in nature outside of the animal body. Among these are to be found the causes of the communicable diseases.

As infectious diseases are the result of definite organisms multiplying in the animal body the facts to be ascertained are as follows: (1) How do these organisms gain entrance to the animal body, (2) when and how do they escape from the infected animal, and (3) how long, and under what conditions, will the specific organisms live outside of the animal body? Again, it is important that the nature of the disease in the affected animal should be recognized, i. e., whether it is an acute general disorder or a localized affection. It is also desirable to appreciate the variation in the form or manifestation of a given disease under different conditions. The answers to these questions will differ for the various infectious diseases, so that to guide one in the control of any given specific disease he must be in possession of the required knowledge of its cause.

The first and most important factor in the control of infectious diseases seems to be knowledge of their cause and the means for making an early diagnosis. Coupled with this must be a knowledge of when in the course of the disease the virus is eliminated from the infected. This is not so significant with the highly infectious maladies where heroic measures are applied, but with such diseases as glanders and tuberculosis it is very important. All cattle that reacted to tuberculin were at first considered immediately dangerous, but the researches of recent years indicate that it is not until the disease process attains to a certain stage that the specific bacteria are given off and the animal becomes a menace to others. This fact is the crux of the German method for controlling tuberculosis. It may not be enough in itself but it takes us one step nearer the goal.

The dissemination of viruses through secretions that may con-

tain them is an important factor that has been neglected in many if not most localities. In this country tuberculosis has probably been disseminated through the separated milk and whey from creameries and cheese factories receiving the milk from infected dairies quite as much as by any other means. Russell of Wisconsin has demonstrated the efficiency of these unsterilized by-products in spreading tuberculosis. In Denmark the separated milk is pasteurized before it is returned to the farm. Other infections such as foot-and-mouth disease are transmitted through the milk. Efforts to prevent diseases of a chronic nature have placed too much emphasis upon the infected animal itself and all too little upon the control of the secretions that are widely distributed or utilized and which are often the agents for the distribution of the virus.

Recent investigations tend to the conclusion that the communicability of the more common infectious diseases with which we have to deal is restricted to individual contact or contact with recently given off secretions, excreta or discharges containing the virus. This tendency adds to the importance of a more careful study of "carriers" among the lower animals. The significance of chronic cases has long been recognized, but the importance of virus disseminators among animals that have recovered has not been sufficiently emphasized. Specific illustrations of this means of spreading the virus and starting up new outbreaks are not numerous where the proof is sufficient to verify the statement. I have in my personal experience, however, observed fowls that had suffered from "roup" or diphtheria and which seemed to be fully recovered, sold and placed in a flock of hens where roup had never been known and where within a short time nearly every fowl in the flock was suffering from an acute attack of the disease. In the last outbreak of foot-and-mouth disease in this country, a calf that had recovered carried the infection to an entire herd. These facts are very suggestive and they bring very vital topics for the sanitarian and those who have to advise the buyers of animals. The teaching from the interesting discoveries relative to typhoid and diphtheria "carriers" in the human species are no doubt applicable to several diseases of the lower animals.

With certain maladies, especially tuberculosis and glanders, the virus undoubtedly often gains entrance with the occult cases. It is well known that infected, but apparently sound cattle and horses have often gone down with the disease after being brought into a new environment and that they have spread the death dealing virus to one or more individuals. This fact is not new and methods have been suggested to prevent it by way of applying certain tests such as tuberculin, mallein, agglutination or other specific reactions before accepting the animals. Experience, however, has shown that these tests are not always accurate because of the state of the disease at the time they are made. This causes us to look further and in our advisory capacity to suggest that animals must be bought, so far as possible, from sound herds and studs. Here again, present knowledge does not always enable one to ascertain with absolute certainty whether or not the disease exists in any of the other animals. Because of the development of methods of precision there is a feeling that we must always be positive and that it is unprofessional to admit that we do not know. With material things this may be possible but with living creatures no man has yet fathomed all the mysteries regarding the subtle forces of resistance and susceptibility. The limitation of known tests compels one to look beyond them. Here is the point — have the animals been exposed? To determine this requires careful records of close observations and proper tests of a herd or stud. These should be so kept that the purchaser could determine from them whether or not he was justified in buying from this herd or stud. I have for several years advocated such examinations, tests and records as a means of guaranty by the owners of the animals. The chief objection that has been raised to such a procedure has been the lack of confidence in the knowledge or ability of the local veterinarian to do such work. When our practitioners become efficient in sanitary work their clients will, I am bold enough to predict, possess signed records of their animals that will warrant a buyer in taking or rejecting any individual.

I do not wish to belittle any of the methods of precision in diagnosing occult cases, but I am strongly of the opinion that the repeated application of such tests in isolated cases is not

tending to the best results. These tests when properly made at the right time on all of the animals of the herd or stable are most valuable, but the singling out of individuals, at irregular times and often at short intervals and subjecting them to such an examination without considering the history or physical condition of the associated animals, is not of so much assistance as many suppose. These infections are to be dealt with according to their various natures. The garden cannot be pronounced weed-free, so long as it is not protected against seed-producing, noxious plants that are thriving in the immediate vicinity. Likewise, the individual animal that has been or is exposed cannot be pronounced free from infection. The dairy, the stud, the flock, are to be dealt with as units. It is in bringing about this condition that the veterinarian has a wonderful opportunity for service.

With certain maladies, there are at present no means of detecting infection in an individual until symptoms appear. Rabies may be cited as the best illustration of this class. Objectionable as it is to a community, quarantine is the sheer anchor of protection here. Although isolation and quarantine are the most effective measures for preventing the spread of this group of diseases, many communities seriously oppose them. Veterinarians and physicians have not always assisted in this important work as much as they should. In my own state the enforcement of quarantine has often been obstructed by professional men who with sophistry seek to expound the nature of the disease and to point out how unnecessary it is to quarantine. Again grievous errors have been made by including too small a territory and in raising the quarantine too soon. The question here seems to be the education of the people in the nature of infections. There is still too much faith in the magic power of the "medicine man" and too much mystery about the disease. The factor here is education and the veterinarian is the teacher. The warning that was sounded by the great leaders that man's opinion is of no value unless founded on the truth of the laws of nature should ever be heeded.

There is perhaps no other phase of this subject so open to controversy as that of immunization and vaccination. These

have been advocated by various authorities for nearly all if not every infectious disease. Results, however, are conflicting, and with few exceptions methods of immunization have not been perfected to the extent that warrants their recommendation as a means of control. There has been such a rapid succession of immunizing procedures that it is impossible to predict the final results. Already the use of vaccines is complicating specific diagnostic tests; but after more research and experimentation definite knowledge on these points will be recorded and the true worth of the newer methods will be determined. One often feels in connection with the multiplication of these new and highly recommended procedures the truth of the lines of Schiller, "We must have foolishness even to exhaustion before we arrive at the beautiful goal of calm wisdom." While every encouragement should be given to the development of immunization as a means of preventing infection, it would seem to be a safer procedure, with the diseases for which it is possible, to center attention on the elimination of the virus. The feeling of safety that dominates one who has placed his confidence in immunization permits relaxation in reference to infection. If the method employed is not efficient it is worse than nothing. There is no half-way position. The virus must be kept away or the animals must be immunized absolutely against it, if the desired protection is secured. Partial immunization or temporary resistance tends to modify not to prevent the disease.

The etiology of most infectious diseases with which we have to deal and the specific methods of making an early diagnosis are sufficiently well known to enable veterinarians to guard against the usual methods of dissemination. A great deal of excellent work is being done and never before did the outlook seem so bright for complete mastery of these infections. The trouble lies in getting at the cases that escape or that are carriers of the virus and which start up the disease anew after it is thought that it has been eradicated. The essential factors here are the acquisition of further information concerning the period of incubation; the recognition of chronic cases; better methods for detecting arrested and occult ones and the detection and elimination of "carriers." To this must be added a greater appreciation of the

definite time in the course of a disease when its virus is given off and its power of resistance outside of the body.

The knowledge of the different specific diseases points to a few underlying principles to be observed by animal owners in the prevention and control of these maladies.

1. Infectious diseases are prevented by keeping the organisms that produce them away — i. e., avoiding infection. This applies to all infectious diseases.

2. Infectious diseases may be prevented by immunizing or vaccinating animals against them. As yet this method can be successfully applied only to a certain few diseases.

3. In the control of infectious diseases all infected animals that are eliminating the specific organisms should be isolated or destroyed and all suspicious animals should be segregated until an accurate diagnosis is obtained.

4. Pastures that are naturally infected with tetanus or black-leg, or that have become infected with anthrax should not be used for grazing.

5. The many points of fact to be determined in connection with each of the infectious diseases necessitate for the best results a competent veterinarian in every community, who can give prompt assistance if any one of these maladies appears. An accurate diagnosis early in the course of the disease and the isolation of the infected animals with proper disinfection will prevent serious outbreaks.

MR. HUSON: The afternoon session must necessarily commence promptly at 2 o'clock. We have some interesting addresses, reports of committees, and election of officers, so the afternoon will be pretty fully occupied; so it is absolutely necessary we should start promptly this afternoon. We now stand adjourned until 2 o'clock.

FOURTH SESSION

THURSDAY AFTERNOON, JANUARY 23

Meeting called to order at 2:15 P. M.

MR. HUSON: We are very fortunate this year in having men on our program who have done things as well as tell about them, and Mr. Campbell, as you know, is no exception to the general rule. He is very familiar, I think, with the breeders of the State of New York. We have been fortunate enough to have him at least on one previous occasion at a meeting of this association.

I take great pleasure in presenting to you Mr. John Campbell, of Woodville, Ontario, Canada, who will discuss the sheep problem in the State of New York.

CAN MUTTON BE PRODUCED PROFITABLY IN THE STATE OF NEW YORK?

JOHN CAMPBELL, WOODVILLE, ONTARIO, CAN.

As the years are passing, new conditions develop, different demands appear, and the question which is at present facing us, is, how can the altered conditions be met, and the demands supplied, so as to give larger returns for our investments and labor?

Never in the past did the question of securing skilled labor on the farm force itself on our attention as at present. Besides, the worth of such labor is constantly increasing; therefore, in order to obtain a fair share for ourselves we must manage our business so it will leave us a proper margin of profit to furnish us with the comforts of life. To do so, the productiveness of our farms must be maintained, and, in the very large majority of cases increased, that the production will be sufficiently large to pay expenses with a liberal margin left for our own use.

To obtain such results in New York State, or in any of the older eastern states, live stock must be a leading feature on the successful farm. We "cannot eat our cake and keep it." Our soils must be fed, as well as our live stock. By stocking our farms to the limit, and feeding carefully and liberally, we can by the one process increase the values of our animals, producing at the same time manure, which in its turn will feed the soil, when waste is prevented and a careful application of it made as quickly as possible.

While each of the live stock classes has its fancier, nearly every farm has more than one line. Sheep were once found on practically every farm. Tastes, fancies, fashions and inclinations have changed; and most unfortunately, the flocks have suffered the most,—excepting, possibly, the owners who have lost heavily.

The demand has far outstripped the supply, so that finished lamb is now a luxury, with prices the highest recorded in January. For those fortunate few, who have bravely stuck to their flocks, the comforting thought is, that the present high values are but an indication of what is in store for years and years to come. Flocks have been sacrificed thoughtlessly; as a result of which a shortage stares the country from one end to the other.

In our rigorous climate, comfortable clothing for day and night we must have, while the demand for finished lamb of good quality is increasing in somewhat similar ratio to the decrease of production. While mutton has been, and always will be in some demand, it is a line of trade which it not likely to increase, as is the call for lamb.

Usually, a yearling sheep will bring less in the market per head, than the well-bred and properly grown lamb is worth. With such a condition—one of the comparatively new ones—is it wise for us to carry over our lambs into the second year with no increase of value, and the fleece, only as an offset to the cost of a twelve months' keep?

We find conditions and prices to differ but slightly, when we compare the production of finished lambs in Ontario and New York State. Our Department of Agriculture undertook to secure definite information regarding the business. A year ago, for the first time in Canada's history, we were able to get official figures regarding the cost and returns from small flocks of grade ewes at widely separated points in Ontario, where nine illustration flocks have been under test by the Ontario Department of Agriculture. The nine flocks' cost for maintenance during the year was \$798.14. The total receipts, consisting of wool and finished market lambs, amounted to \$1,167.53, furnishing a balance of profit of \$369.39, or 46 per cent. of cost as the share of profit. The profit on capital invested was 40 per cent. The best doing flock gave on investment 71 per cent.; the lowest in profit flock

gave 9½ per cent., and one flock which was unfortunate in having a loss of two ewes and the ram, at head of flock-values of losses deducted still made a clear profit on investment of 17¾ per cent.

It may be stated that the year was not nearly so favorable in prices realized for the finished lambs as any of several former years would have been. It was not up to the average.

It is strange, but to a very marked extent true, that if any statement is repeated often enough, he who utters it, and they who listen, believe it to be true, though in reality it is far from being correct.

On the other hand let us notice how any new or old line of production, which people use and are the better for using, finds its place and market. It is not sufficient to have the superior article produced. We must let the public know that we have such within their reach, and use every lawful endeavor to convince the people that they can have more healthful and comfortable, and, therefore, happier living by using the commodity we wish to promote.

The way is already paved to the profitable markets for our flock's productions. The failure and blame rest greatly with the producer in the case under consideration.

The demand from east to west, but especially in New York State, is increasing more rapidly than the supply. It is not creditable to us that we have not supplied our own people during the past with all the mutton and lamb required for home consumption. To develop the industry and so stimulate it as to meet the demand fully, we must make known, and that in a convincing manner, the profits directly and indirectly which are nearly absolutely certain to result from the flock on the ordinary farm cared for in a reasonable manner and given but a small share of the labor required in other lines of live stock husbandry. It may be necessary, in order to convince the many, to spend considerable in the way of educating the indifferent, as to the possibilities of the industry.

We need more and better flocks. People generally stand ready to be convinced if not yet fully aware of existing conditions. We must be ever ready to talk sheep up and not down. Tell the good

story of the great benefit and possible success of the flock on the farm. Then repeat and repeat the truths, until the ones who should know, cannot help knowing the good which may be obtained with such comparative ease, and with so small an outlay. This is an age of advertising. Our agricultural departments must be held responsible for any lack on their part to spread truths of which they are cognizant, truths which, if made widely and freely known, cannot fail in benefiting the country at large.

Having such indisputable facts from which to reason there is no need for delay in putting forth all possible legitimate efforts in compelling the farming public to give due consideration to an industry which is certain to have a beneficial and comforting bearing on their personal and financial welfare.

That compelling, which will surely develop the business, can be done somewhat in the manner of successful departmental stores. They advertise freely. We have had it proven to us without doubt, that the best of quality can be produced in New York State. We have the consumers who are prepared to use more than we are now producing, and that at a highly profitable price to the breeders. The endeavor then should be, and must be, to enlist the energies of our agriculturists to find a place on practically every farm for a profitable flock of sheep.

At international and state exhibitions, sheep and lambs, both pure breeds and grades from New York State, have been awarded high honors. The past month at Chicago, a superior bunch of grade market lambs were easy winners in their class, while an exhibit of Shropshire lambs from your state also, captured the best of premiums offered in their section. That proves beyond doubt, that right here you have the combination necessary for the production of the best.

During forty years it has been my lot to be closely in touch with the growing, finishing and marketing of cattle, sheep and swine,—feeding all the soil's production on the farm. While the practice has been found most satisfactory as a whole, yet it was the sheep department which proved to be the steady producer of profit directly and indirectly.

To all who are entering their life's work on the farm, my suggestion would be, keep at least a small flock of sheep as a part of

the farm equipment. Have that flock the best of its kind, be it pure breds or grades. Never use but a pure-bred ram. Give reasonably good care in winter and summer, with special attention to the necessary details at the right time, and you will have a lasting source of profit, and pleasure.

The next speaker on the program, Mr. C. A. Nelson, of Waverly, Iowa, spoke extemporaneously on "The Advantages of Breeding Pure Bred Animals." Mr. Nelson, in a most engaging way, gave many personal experiences, interspersed with a number of humorous allusions and stories. At some length he told of the successful operation of creameries in Bremer County, Iowa, which he declared to be the greatest butter producing county of its size in the world.

Mr. Nelson's speech, full of sense, replete with humor and earnest throughout delivered like the fire of a Gatling gun, was received with most hearty applause, and at its close the speaker was the recipient of congratulations from the entire audience. His speech concluded the formal program.

Mr. Gould, chairman of the committee on treasurer's accounts, reported that the committee had examined the accounts of the treasurer and found them correct.

Mr. Mosher, chairman of the committee on resolutions, reported the following:

WHEREAS, Owing to the difficulty of the Breeders' Association having knowledge of the capacity of all persons desiring to have their names placed on the list of expert judges, your committee deems the publication of such a list unwise, therefore be it

Resolved, That this association discontinue the publication of the list of expert judges.

This resolution was adopted.

The committee also reported the following:

WHEREAS, In the opinion of the committee on resolutions there are some needed changes in the stallion registration laws,

Resolved, That the president of this association be requested to appoint a committee of three members to act on any proposed legislation on this subject.

The resolution was unanimously adopted.

President Huseon appointed E. S. Akin, Dr. W. G. Hollingworth and William Hayden as such committee.

The committee further reported:

WHEREAS, Certain bills have been presented in Congress in relation to regulating the registry of pure-bred animals, and

WHEREAS, We believe that it is for the best interest of the pure-bred live stock industry that the work of recording, transferring and supervising the testing of pure-bred animals to be left in the hands of the various breeders' associations as they are now organized; therefore be it

Resolved, That the New York State Breeders' Association and its auxiliary societies place themselves on record as being opposed to government control of the live-stock registry associations, because we believe that the breeders who are vitally interested in each breed can do more for the live-stock business than any board or set of officers appointed by the general government. Further, be it

Resolved, That the New York State Breeders' Association of the members of Congress from this state; also to Senators Root and O'Gorman, asking them to use their influence to prevent the passage of these or any similar bills which may be introduced, looking toward government control of pure-bred live stock record associations. Also that copy of this resolution be sent to Hon. Wayne Dinsmore, secretary of the National Society of Record Associations, Live-Stock Record Building, Chicago, Ill. Further, be it

Resolved, That we urgently request the Secretary of Agriculture at Washington and the Treasury Department to recognize but one association of registry for each breed of pure-bred animals owned or bred in the United States.

The president then announced the next business before the meeting was the election of officers for the coming year, and asked for nominations.

Mr. Fred W. Sessions said: "Mr. President and Gentlemen:

I wish first, on and in behalf of the city of Utica, to extend her thanks to this association for the honor which they have conferred by meeting in convention here and to each and every one who has attended this convention." Mr. Sessions then proceeded to place the name of President Huson in nomination for re-election, and moved that the secretary of the association be directed to cast one ballot for Mr. Huson for president. Mr. Sessions put the question to the members, and all voted "aye," whereupon he declared Mr. Huson president for the coming year.

MR. HUSON: This is the first time that Mr. Sessions has been out of order in any of the meetings of this association. He knows very well, as do most of you gentlemen, my feelings in regard to this association and in regard to serving as its president. I am anxious and desirous of serving in any capacity, or doing anything in my power towards promoting the animal husbandry interests of this state, and if I felt that my continuance in the office of president of this association would add anything to what I otherwise might do, I would not hesitate to accept the position you so kindly and generously tender me. I desire to assure you, however, that, serving in the ranks of this association as a private, I will give to it the same attention, the same interest, and will labor as faithfully towards its success as I have done as your president.

As you are aware, I have but very little leisure. I feel that I have neglected, to some extent, the affairs of this association; and while your vice-president was kind enough to say that I was responsible for this program (and I was, in a way), that was the least of the things that had to be done to make this meeting here in Utica the great success it has been made. The detail work, the thousand and one things that had to be done in order to bring this meeting to a successful conclusion fell entirely upon the vice-president, Mr. Sessions, as you are aware, and it is to him, more than any other man in all this association, to whom is due the credit of this successful meeting.

I have stated sufficient reasons why you ought not to ask that I should serve in the capacity of president another year. I believe it is better for the welfare of this association, that these positions, honorable though they are, and highly prized by those called

to fill them, should be filled by someone else, and I therefore desire to decline the election which you have so generously tendered; and I think, without transgressing the rules any more than Mr. Sessions did, that I have the right to place him in nomination. He is the man, more than any other man in the State of New York, who is entitled to lead this association the coming year, and I desire to present Mr. Sessions as the choice of the association for president.

MR. SESSIONS: The association has already expressed its preference, and there are reasons why it would be absolutely impossible for me to accept anything of that kind under any consideration; but aside from that, the association has made its election.

I move we proceed to the election of a vice-president. (Motion seconded and carried.)

MR. PEER: Gentlemen: You have heard the speeches of both our worthy friends. It is needless for me to say anything additional to what our president has said in reference to our friend Mr. Sessions. I would like to have the secretary cast one ballot for the nomination of vice-president for the ensuing year.

MR. HUSON: Are you ready for the question? (Carried unanimously) The ballot has been cast and Mr. Sessions has been elected. The next office to be filled is that of secretary. Whom do you want for your secretary the coming year?

Mr. Wing R. Smith nominates Mr. Brown as secretary. (Motion seconded.) Are there any other nominations for secretary? If there are none, Mr. Smith moves that the treasurer be authorized to cast the vote of the association for Mr. Brown for secretary for the ensuing year. The vote has been cast for Mr. Brown, and we declare him the unanimous choice.

The next is the treasurer. Whom do you desire for treasurer the ensuing year?

Mr. Mosher moves that the secretary be authorized to cast the unanimous vote of the association for Wing R. Smith for treasurer for the ensuing year. The vote has been cast and Mr. Smith declared elected.

MR. HUSON: The next in order is the election of four directors. We have twelve directors, you understand, the terms of

four of whom expire each year. This is for the election of four directors for a term of three years, in the place of E. W. Mosher, Dr. E. C. Hatch, A. S. Chase, and E. S. Akin. Whom do you desire for directors in the place of these gentlemen?

Mr. Mosher is nominated for one, to succeed himself. (Motion seconded.) Are there any other nominations? Mr. E. A. Powell is nominated and the nomination is seconded. Are there any other nominations? Mr. Henry L. Wardwell is nominated, and Mr. Akin is nominated. We have now the nominations of Mr. Mosher, Mr. Powell, Mr. Wardwell, and Mr. Akin. Are there any other nominations? If not, is there a motion in regard to the selection or how we shall proceed in the election? Mr. Gail moves that the secretary be authorized to cast the vote of the association for these four gentlemen who have been nominated. Are you ready for the question? (Carried.) The ballot has been cast and I declare Mr. Mosher, Mr. Powell, Mr. Wardwell and Mr. Akin elected directors of this association for the term of three years.

MR. MOSHER: I wish to extend a vote of thanks to the good people of Utica for the entertainment they have given this society. (Motion seconded.)

MR. HUSON: I want to add to that, if you permit me, a vote of thanks to the newspapers of Utica, for in all the time that I have had any connection with this association, there never has been a year when we have had as full, complete and accurate accounts of our proceedings as we have in the Utica papers during this session, and I think the papers are entitled to a vote of thanks as well as the people of Utica, and with your permission, Mr. Mosher, I will add that to the resolution. All you gentlemen who are in favor of this resolution giving to the good people of Utica the thanks of this association, and the newspapers of Utica our compliments for their courtesy, will please rise. (All rose.)

There being no further business the meeting was declared adjourned.



FIG. 24.—GEORGE W. SISSON, JR., PRESIDENT OF THE NEW YORK STATE AGRICULTURAL SOCIETY, 1913.

STATE OF NEW YORK
DEPARTMENT OF AGRICULTURE

CALVIN J. HUSON, Commissioner

Bulletin 47

PROCEEDINGS

OF THE

SEVENTY THIRD ANNUAL MEETING

OF THE

New York State Agricultural Society

IN COOPERATION WITH THE

STATE DEPARTMENT OF AGRICULTURE

1913

SWORN STATEMENT

The publication of the following statement is required by act of Congress August 24, 1912:

The Department of Agriculture Bulletin is owned and published by the New York State Department of Agriculture, Albany, N. Y.

CALVIN J. HUSON,
Commissioner.

Sworn and subscribed to before me this 14th day of March, 1913.

E. F. BURKE,
Notary Public.

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OFFICERS FOR 1913

PRESIDENT

George W. Sisson, Jr., Potsdam.

VICE-PRESIDENTS

First District.—J. J. Dillon, New York.

Second District.—Ezra Tuttle, Eastport.

Third District.—Gilbert M. Tucker, Albany.

Fourth District.—C. Fred Boshart, Lowville.

Fifth District.—W. R. Smith, Syracuse.

Sixth District.—O. U. Kellogg, Cortland.

Seventh District.—W. C. Barry, Rochester.

Eighth District.—Clark Allis, Medina.

Ninth District.—Dr. G. H. Davison, Millbrook.

SECRETARY

A. E. Brown, Batavia.

TREASURER

Harry B. Winters, Albany.

EXECUTIVE COMMITTEE

A. Denniston, Washingtonville.

J. A. D. S. Findlay, Salisbury Mills.

E. H. Chapman, 1 Madison Ave., New York.

Dr. Thos. E. Finegan, Albany.

Franklin D. Roosevelt, Poughkeepsie.

E. Van Alstyne, Kinderhook.

W. W. Ware, Batavia.

T. B. Wilson, Hall.

F. W. Sessions, Utica.

STANDING COMMITTEES

AGRICULTURAL EDUCATION

Chairman, L. H. Bailey, Ithaca, N. Y.

Dr. Thos. E. Finegan, Albany.
W. H. Vary, Watertown.

Gilbert M. Tucker, Albany.
Geo. G. Royce, Macomb.

PUBLICITY

Chairman, F. W. Sessions, Utica.

C. W. Burkett, New York City.

Harry B. Winters, Albany.

LEGISLATION

Chairman, Hon. C. Fred Boshart, Lowville.

Hon. T. B. Wilson, Hall.

Hon. Franklin D. Roosevelt, Hyde
Park.

Hon. O. U. Kellogg, Cortland.

H. V. Bruce, New York City.

Rev. Brother Barnabas, Lincolndale.

John J. Dillon, New York City.

MARKETING, TRANSPORTATION AND GRIEVANCES

Chairman, John J. Dillon, New York City.

P. H. Burnett, New York City.

H. O. Palen, Highland.

E. H. Dollar, Heuvelton.

W. W. Ware, Batavia.

E. A. Powell, Syracuse.

Jared Van Wagenen, Jr., Lawyers-
ville.

TAXATION AND BANKING

Chairman, W. H. Giles, Skaneateles.

Henry Burden, Cazenovia.

Floyd N. Carlisle, Watertown.

DEVELOPMENT OF AGRICULTURAL RESOURCES

Chairman, James W. Wadsworth, Jr., Mt. Morris.

Hon. Calvin J. Huseon, Albany.

Dean H. E. Cook, Canton.

Wm. Cary Sanger, Sangerfield.

D. B. Carse, New York City.

Dr. W. H. Jordan, Geneva.

Edward van Alstyne, Kinderhook.

Loton Horton, New York City.

Dr. Boothe C. Davis, Alfred.

COOPERATION

Chairman, C. R. White, Ionia.

Ezra A. Tuttle, Eastport.

F. N. Godfrey, Olean.

Rev. Brother Barnabas, Lincolndale.

E. A. Powell, Syracuse.

MEMBERSHIP

Chairman, James A. D. S. Findlay, Salisbury Mills.

Edwin H. Chapman, New York City.

F. W. Sessions, Utica.

R. T. Wainwright, Port Chester.

W. P. Schanck, Avon.

PRESIDENTS

1841	Joel B. Nott*	Guilderland.
1842	James S. Wadsworth*	Geneseo.
1843	James S. Wadsworth*	Geneseo.
1844	John P. Beekman*	Kinderhook.
1845	Benjamin P. Johnson*	Albany.
1846	John M. Sherwood*	Auburn.
1847	George Vail*	Troy.
1848	Lewis F. Allen*	Black Rock.
1849	John A. King*	Jamaica.
1850	Ezra D. Prentice*	Albany.
1851	John Delafield*	Oakland.
1852	Henry Wager*	Utica.
1853	Lewis G. Morris*	Mount Fordham.
1854	William Kelly*	Rhinebeck.
1855	Samuel Cheever*	Elmira.
1856	Theodore S. Faxon*	Utica.
1857	Alonzo S. Upham*	Le Roy.
1858	William G. McCoun*	Syracuse.
1859	Abraham B. Conger*	Waldberg.
1860	Benjamin N. Huntington*	Rome.
1861	George Geddes*	Fairmount.
1862	Ezra Cornell*	Ithaca.
1863	Edward G. Faile*	New York.
1864	James O. Shelden*	Geneva.
1865	Theodore C. Peters*	Darien.
1866	John Stanton Gould*	Hudson.
1867	Marsena R. Patrick*	Sacketts Harbor.
1868	Thomas Hall Faile*	New York.
1869	Samuel Campbell*	New York Mills.
1870	Solon D. Hungerford*	Adams.
1871	Richard Church	Belvidere.
1872	Milo Ingalsbe*	South Hartford.
1873	Benjamin F. Angel*	Geneseo.

* Deceased.

1874	Harris Lewis*	Frankfort.
1875	Alexander S. Diven	Elmira.
1876	Edwin Thorne*	New York.
1877	Patrick Barry*	Rochester.
1878	George W. Hoffman	Elmira.
1879	Horatio Seymour*	Utica.
1880	N. Martin Curtis*	Ogdensburg.
1881	Robert S. Swan*	Elmira.
1882	John D. Wing*	New York.
1883	George F. Mills*	Fonda.
1884	William M. White*	Canaseraga.
1885	James W. Wadsworth	Geneseo.
1886	James McCam*	Elmira.
1887	James Geddes*	Fairmount.
1888	W. A. Wadsworth	Geneseo.
1889	James Wood	Mount Kisco.
1890	James Wood	Mount Kisco.
1891	O. B. Potter*	New York.
1892	O. B. Potter*	New York.
1893	J. B. Dutcher	Pawling.
1894	J. B. Dutcher	Pawling.
1895	I. P. Roberts	Ithaca.
1896	I. P. Roberts	Ithaca.
1897	Benjamin F. Tracy	New York.
1898	Benjamin F. Tracy	New York.
1899	Timothy L. Woodruff	Brooklyn.
1900	Timothy L. Woodruff	Brooklyn.
1901	John H. Farrell*	Albany.
1902	F. E. Dawley	Fayetteville.
1903	F. E. Dawley	Fayetteville.
1904	F. E. Dawley	Fayetteville.
1905	Gilbert M. Tucker	Albany.
1906	Gilbert M. Tucker	Albany.
1907	James H. Durkee*	Sandy Hill.
1908	James H. Durkee*	Sandy Hill.
1909	Raymond A. Pearson	Ithaca.
1910	Raymond A. Pearson	Ithaca.
1911	Raymond A. Pearson	Ithaca.
1912	George W. Sisson, Jr.	Potsdam.
1913	George W. Sisson, Jr.	Potsdam.

* Deceased.

CONSTITUTION

The style of this society shall be "The New York State Agricultural Society." Its object shall be to improve the condition of agriculture, the rural household and mechanic arts.

Section 1. The society shall consist of such citizens of the state as shall signify in writing their wish to become members and shall pay, on subscribing, not less than one dollar and annually thereafter one dollar; and also of honorary and corresponding members. The presidents of state associations actually working for the improvement of the various branches of agriculture, the presidents of county and town agricultural societies, or a delegate from each shall, *ex-officio*, be members of this society. The payment of ten dollars or more, as fixed by the executive board, shall entitle the donor to life membership and shall exempt him from annual dues.

Section 2. The officers of the society shall consist of a president, nine vice-presidents, one to reside in each judicial district of the state, a secretary, a treasurer and an executive committee of eight additional members. The executive board shall consist of the officers above named; eleven members of the board shall constitute a quorum.

Section 3. The president shall preside at all meetings of the society and of the executive board. In his absence a vice-president shall be named by the meeting as presiding officer.

Section 4. The secretary shall keep the minutes of the meetings of the society and the executive board; he shall conduct all correspondence in behalf of the society.

The treasurer shall keep the funds of the society and disburse them on the order of the executive board, or a duly appointed sub-committee thereof, countersigned by the president of the society, and shall make a report of the receipts and expenditures at the annual meeting in January.

The executive board shall transact the general business of the society and shall perform such other duties as shall seem best calculated to promote the objects of the society.

Section 5. There shall be an annual meeting of the society on the third Wednesday in January, in the city of Albany, at which time all the officers shall be elected by a plurality of votes and by ballot.

The executive board shall have power to fill any vacancies which may occur in the offices of the society during the year. The society may be convened in special meeting by the executive board and fifteen members shall constitute a quorum. No person shall be qualified to vote at any election of officers of the society unless he shall have been a life member for at least thirty days prior to the holding of such election.

Section 6. No officer of the society shall receive any pecuniary compensation for services rendered to or for the society, except on the authority of the society granted at a regular annual meeting.

Section 7. The constitution may be amended by a vote of two-thirds of the life members present at an annual meeting.

PROGRAM

GENERAL SUBJECT

FARM FINANCE AND RURAL CREDITS

All sessions to be held in the Auditorium of the State Education Building

Monday, January 13, 2 p. m.

Report of Committee on Publicity

Chairman, F. W. SESSIONS, Utica

Report of Committee on Marketing, Transportation and Grievances

Chairman, JOHN J. DILLON, New York City

Report of Committee on Development of Agricultural Resources

Chairman, Hon. WM. CARY SANGER, Sangerfield

ADDRESSES

A Successful Local Cooperative Movement

Hon. SETH LOW, Bedford Hills

Needed Changes in Drainage Laws in New York State

Prof. ELMER O. FIPPIN, Ithaca

Discussion by Hon. THOS. F. CARMODY, Attorney-General, New York State, and
Hon. JOHN N. CARLISLE, Watertown

8 P. M.

Lieutenant-Governor MARTIN H. GLYNN, *presiding*

PRAYER

Rev. ALEXANDER H. ABBOTT, Emanuel Baptist Church, Albany

Annual Address of President of New York State Agricultural Society

GEORGE W. SISSON, JR., Potsdam

ADDRESSES

Land and Agricultural Credits

CHARLES A. CONANT, New York City

The Agricultural Law: Its Improvement and Enforcement

Hon. CALVIN J. HUSON, Commissioner of Agriculture, Albany

Tuesday, January 14, 10 a. m.

Report of Committee on Legislation

Chairman, Hon. C. FRED BOSHART, Lowville

Report of Committee on Banking and Legislation

Chairman, Senator T. HARVEY FERRIS, Utica

ADDRESS

**The Practical Application of Agricultural Credit Systems to American Farm
and Market Problems**

JOHN J. DILLON, New York City

Report of Committee on Cooperation

Chairman, EZRA A. TUTTLE, Eastport

2 P. M.

**Report of Committee on Agricultural Education and Address: Progress in
Agricultural Education in New York State**

Dr. THOMAS E. FINEGAN, State Education Department, Albany

The Housewives League and the Producer

Mrs. JULIAN HEATH, President, Housewives League, New York City

Modern Business Methods Applied to Farming

Dean H. E. COOK, State School of Agriculture, Canton

8 P. M.

Governor WM. SULZER *presiding*

ADDRESSES

Financing American Farm Operations

HARVEY JORDAN, Atlanta, Ga.

Can European Cooperative Methods be Applied to American Farming?

Prof. E. W. KEMMERER, Princeton University, Princeton, N. J.

Sir HORACE PLUNKETT, Dublin, Ireland, is expected to be present and take
part in discussions

Wednesday, January 15, 9:30 a. m.

Business Session

Report of Secretary

ALBERT E. BROWN, Batavia

Report of Treasurer

HARRY B. WINTERS, Albany

Reports of Special Committees

Miscellaneous Business

Election of Officers

ANNUAL MEETING

IN THE AUDITORIUM, STATE EDUCATION BUILDING,
ALBANY, N. Y.

JANUARY 13-15, 1913

MONDAY, JANUARY 13

AFTERNOON SESSION

President George W. Sisson, Jr., called the meeting to order.

THE PRESIDENT: While the attendance as yet is rather light, on account of the day of the week on which we have been obliged to start this convention, still I believe that the people are coming. Without further preliminaries we will take up our program as printed, copies of which you have, and listen first to a report from the Committee on Publicity by F. W. Sessions, Esq. of Utica, chairman of that committee.

REPORT OF PUBLICITY COMMITTEE

F. W. SESSIONS

Your committee has had several meetings during the past year, at which many plans have been presented and discussed, although none have been adopted. Very little has been accomplished because of the same old reason, "lack of funds." Your committee thought to overcome the difficulty to some extent by obtaining new members. A personal letter campaign was made at a cost of \$21.00 with the following results:

18 new life members.....	\$180.00
20 new annual members.....	20.00
Contributions	5.00
<hr/>	
Total	\$205.00

Surely encouraging, but not sufficient to furnish means for practical publicity. We believe that the best results cannot be obtained through an unpaid committee without funds.

We would suggest that the chairman of the Publicity Committee hereafter be a paid employee of the state and in the Department of Agriculture under the direct supervision of the commissioner; that he devote his entire time to New York State agricultural publicity; that such publicity work include the editing and sending out to newspapers of the state, articles of interest on agricultural subjects prepared in the form of plate matter for their convenient use; the preparing of magazine articles and advertising, the suggesting of plans for exhibits of New York State agricultural products in the different states; the conducting of a big land show in New York City devoted exclusively to New York State and articles made from New York State agricultural products, and illustrating subjects and matter pertaining to New York State agriculture.

Such chairman should be a member of the New York State Advisory Board of the Panama Exhibition, and a good liberal appropriation should be made by our legislature for publicity purposes. We believe that the 1915 exposition offers a big opportunity for advertising New York State and its agriculture that should not be overlooked. Much paper and magazine work should be done in the meantime, telling of our superior advantages, great markets, productive fields, and cheap, quick and efficient transportation. Such advertising properly done would bring thousands of inquiries from farmers of other states and many of them would come here to buy lands.

New York State has not advertised as have other states. She has failed to proclaim to the world in the most efficient way her agricultural advantages. On the other hand, the statement has gone out that our lands are depleted and worn out; that the state is filled with abandoned farms; that our farmers are discouraged; and the state has not successfully challenged these statements.

Here is a work of immense magnitude, but a work that a properly constructed publicity committee can accomplish if provided with proper and sufficient funds. Without funds, such a committee is useless.

Our railroads are doing much for New York State agriculture with their experimental or model farms, their exhibition trains, literature and advertising, and Mr. Welsh of the New York



FIG. 25.—F. W. SESSIONS, CHAIRMAN OF PUBLICITY COMMITTEE.

Central Railroad informs me they are making special freight rates to farmers on lime and fertilizers shipped direct to the farmers to be used on their farms. Our State Department of Agriculture is under highly efficient management, and is doing great work. These things would be of material assistance to any Publicity Committee in position to do proper work.

During the past year, several county farm bureaus have been started in New York State and in at least two instances members of this committee have had something to do in securing the establishment of such bureaus. It is good, practical work and should be encouraged.

Your committee regrets that during the past year it has been able to accomplish so little, but really feels that it has nothing in this direction to apologize for as the lack of funds is a handicap.

THE PRESIDENT: You have heard the report of the Publicity Committee. Are there any remarks on this report?

On motion the report of the committee was accepted.

THE PRESIDENT: This subject of publicity for New York State agriculture is a matter of such far reaching importance and possibilities that perhaps you may wish to touch upon this report. If so you may have an opportunity for a few moments.

MR. SESSIONS: I may state verbally that a little additional work we undertook to do, but failed to accomplish, was to secure the giving of lectures, or having lectures included in the free lecture course in New York City, on agricultural topics. We were too late to get them into the fall course, but were promised that they would be introduced into the winter course. We heard nothing from them, so I took it up some time later and was informed that we were also too late for that course; that they would be taken up another year.

MR. LOW: If the committee will leave it to me the next time they want to bring that about, I may be able to help them. I fancy it is only a question of speaking at the right time.

THE PRESIDENT: Thank you, Mr. Low. I imagine that the reason we have no such lectures in their course this winter is because we have not ourselves found the proper men for them. They are not in touch with good men for this particular work.

MR. TUTTLE: I think that this society appreciates perfectly what Mr. Sessions has said in his report in relation to the lack of funds as the reason they cannot do finished work. I desire to move that the request of this committee, through this society, for an appropriation from the legislature to assist in this publicity work, be referred to the Legislative Committee of this society with a view to having the matter carefully considered, and, if possible, to secure a proper appropriation for this publicity work.

MR. SCHRIVER: It seems to me that with the great interest in agriculture in the State of New York at the present time, we ought to have a larger constituency, and a larger constituency of course would mean more money in the treasury. We should not be handicapped for a few hundred dollars. It seems to me we ought to be able to take some practical measures by which we could increase the life membership of this society. We should do something that will bring results, and not be everlastingly depending upon the public treasury, and asking the legislature to do for us what we ought to do for ourselves.

THE PRESIDENT: It has been moved and seconded that the matter of approaching the legislature for an appropriation for our publicity work be referred to our Legislative Committee for report to us later. Motion carried.

THE PRESIDENT: We will next listen to a report from the Committee on Marketing, Transportation and Grievances, by the chairman, John J. Dillon, Esq., of New York City, Treasurer and Manager of the Rural Publishing Company.

REPORT OF COMMITTEE ON MARKETING, TRANSPORTATION AND GRIEVANCES

JOHN J. DILLON

During the past year the market situation has dragged along consistently with its old economic wastes, its hardships and losses to the producer, and with its extortionate tax on the consumer. There are continued complaints from shippers that railroads fail to furnish cars for perishable products in time for shipment, and in other cases products are unduly delayed in shipment, preventing delivery in prime condition. Express companies continue to lose shipments in transit, to damage them, and to charge expressage

at both ends. Commission men and buyers have continued to solicit consignments and shipments under the encouragement of high quotations and sometimes of definite prices, but when the goods are received and disposed of they make such returns as their charity prompts or their avarice permits. Milk companies have failed owing producers up to \$90,000 for milk deliveries, and after going through the stereotyped processes of receivership, bought up many of the old creameries and shipping stations and continued the business free from the burden of their indebtedness, while paying the producer only a small fraction of the original obligation.

The markets and hotels in villages and cities throughout the state testify to the enterprise and organization of California and Oregon fruit growers by the display of the products of these states on their markets and tables. Many of these are located in agricultural sections where better and fresher flavored products of our New York orchards and gardens are decaying for want of a customer.

Shipments of farm products have continued to go from inland points hundreds of miles past local markets to city terminals and are re-shipped again over the same roads back to the local centres. During the shipping season last fall carloads of peaches in western New York rotted on the ground, or perished in transit because transportation companies either neglected to furnish the cars to load the fruit when ready for shipment, or delayed the car in transit until the fruit was damaged. Growers complain that fruits and vegetables have perished on their hands because they could not sell them in the New York markets for a price sufficient to pay for the packages and transportation. Yet in every case where definite information has been available, the city consumer has been obliged to pay at retail the highest price commanded for these products in seasons of scanty production.

Still we have made some progress. This committee has received during the year 555 complaints from shippers, and accounts have been collected for them to the amount of \$10,902.51. This includes complaints for damaged and lost goods against railroad and express companies for excessive freights, and excessive and duplicate express charges. Two thousand three hundred and

ninety dollars and eighty-two cents has been collected during the year on these latter accounts, which the shippers themselves were unable to get; and during the three years of the existence of this committee 1,494 complaints of this kind have been filed and \$32,078.59 collected and forwarded to the shippers without reduction or expense to them. During November and December alone seven overcharge express claims were adjusted that required from seven months to two years to collect.

We now have some measure of parcel post and recent orders of the Interstate Commerce Commission are intended to lessen the excess charges and duplicate collections by express companies.

During the year the State Food Investigating Commission has been created by the legislature and members appointed by the Governor to investigate the causes of the high cost of living. A sub-committee consisting of Honorable William Church Osborn, our Commissioner of Agriculture and our associate Ezra A. Tuttle, has been investigating conditions of foods and markets in New York City. They have developed information and given official expression to many of the conditions and abuses of which we have so long complained without avail, and measures have been suggested and bills are being prepared in accordance with the suggestions, to correct the abuses and eliminate some of the wasteful, extravagant, and in some cases dishonest methods that have prevailed for so long in the New York markets. Attention has also been crystallized through the investigation of this committee on the want of a system to regulate the sale of food products through tricky commission houses and irresponsible speculators in food products. A bill has already been prepared by Senator Roosevelt to regulate this traffic in the hope of eliminating many of its abuses, and we have much reason to hope that this bill will soon become a law.

Under the auspices of this society, a conference of cooperative interests was held in New York City on April 19 and 20 last. The chairman of the Cooperative Committee will probably tell you more in detail about this committee in his report. It is enough for the present to say that provision was made for a State Standing Committee on Cooperation and this committee has been organized with a membership of 180. They held a conference in



FIG. 26.—JOHN J. DILLON, CHAIRMAN OF COMMITTEE ON
MARKETING, TRANSPORTATION AND GRIEVANCES.

New York on December 5, to consider how the new parcel post system may be developed to distribute farm products, and effecting trade between producers and consumers; more particularly to effect means for the organization of cooperative societies among producers and consumers. The Housewives' League (a large association of New York City consumers) promises to help in the development of the parcel post trade by furnishing the names and guaranteeing the credit of members, providing the producers' organization will cooperate by guaranteeing the grade, quality and measure of the goods. It was the sense of the members of that committee that the organization of cooperative shippers in local country units must go hand in hand with the organization of a central selling agency, with headquarters in the city, representing the country associations and controlled by them. In furtherance of this measure the chairman was directed to prepare a charter for the central organization and to assist in the development of a uniform system for the organization of the local units. These local units for shipping in cooperation are held to be important because it is only through association that we can hope to have shipments made in uniform packages, in proper grades, and in full weights and measures. The guarantee of these standards will be necessary in order that the shipper may profit by the proposed commission law and the proposed food commission bill and in whatever may develop in the enlargement of the parcel post system. These shipping units could also be utilized to develop the local trade of villages and cities throughout the state, and to avoid the wasteful and extravagant practice of shipping first to the City of New York and then doubling the rate and charges back to the local market. The individual producer is unable to supply these local markets because of the expense of small deliveries, and the local caterer or hotel man is unable to patronize the producer because of his absolute need of a steady and uniform supply, but where all producers in a neighborhood are shipping through a common warehouse, this trade could be supplied and developed to the profit of the producer and saving of the consumer in a steady supply of food material fresh from the farm.

The attorneys have had some delay in familiarizing themselves with the laws already existing and with the needs of cooperative

legislation, so that we have not been able to present entirely satisfactory papers at this time, but they are under development and we hope to have them ready for early use. The conference of the State Standing Committee on Cooperation also recommended that the state be requested to assist in the organization of the cooperative shipping association either through the committee or through the Department of Agriculture, there being a precedent in other states and other countries for this assistance to cooperative work in its early development. We ask our Legislative Committee to further the interest of this request.

We are making our shipping initiative none too soon. The State of Maine already has a fast developing system of cooperation. The development of the trade in California fruits and Oregon apples is a familiar subject. Local cooperative societies for the manufacture and sale of dairy products, for the gathering and shipping of eggs, for the packing and marketing of fruits, and for the sale and delivery of milk, are meeting with great success in Pennsylvania, Indiana, Wisconsin, Minnesota and other states. In New York City and its suburbs, local communities are organizing cooperative stores to supply their members with food supplies. Only last week the large restaurant and hotel keepers in New York City organized themselves into a cooperative association with a million dollars capital for the purpose of buying foods without paying tribute to middlemen, food speculators and others. All of these consumers are chafing under the constantly advancing costs of food products. They are anxious to buy from the producer at first hand but they must have a steady supply and uniform grades. They will demand full weights and measures. The individual shipper cannot hope to supply this trade. Direct selling by the producer and direct buying by these large consumers will be possible only through cooperation in packing, grading and shipping. This is an outlet now for farm food products of every kind and description that New York State producers ought to command at once, and may command if they prepare themselves to supply it. Someone is going to have the trade and those who have it first will have the advantage in future sales. I am personally acquainted with the president of the Hotelmen's Company and I shall be glad to do everything that I can to con-

nect producers with these consumers, but it will be impossible to do anything definite until we can give them assurance of a steady and uniform supply.

For many years we have recognized the necessity of an agency in New York City to represent the shippers. One man with a clerk would save shippers thousands of dollars annually. His work would be to keep shippers advised of the conditions of markets and the responsibility of produce houses, to encourage and arrange for direct shipments, look after shipments when delayed, or when there was a complaint of quality or condition, and to supervise the collection of delayed accounts. Some of these functions will be covered by official inspectors if the bills now in preparation become laws, but in case they fail, an agency of the kind is almost a necessity for distant shippers.

Since writing the above I have had a conference with the Commissioner of Agriculture and am very much pleased to find that he is entirely in harmony with the Cooperative Committee in this matter of organizing local units and shipping in this way, and he is not only willing but anxious to use the department in connection with this society in furthering that work.

Also since this was written a committee of small restaurant-keepers in New York came to see me in reference to the matter, with a paper showing that they are organized for the same purpose, that of buying their food direct from the producers.

MR. WARD: I am very much interested in the report. What I should like to know is how can we make use of it. How can we form these cooperative organizations and get in touch with some one? How are we going to get practical results?

MR. DILLON: It is simply a matter of business and it is a development—I was going to say modern development—of agricultural business that is just beginning in this country and that has been a success in every place where it has been tried and where it has been carried on in a true cooperative spirit. We have had a great deal of cooperative work in this country but much of the work under the name of cooperation has not been cooperative at all. Wherever we have had that kind of an organization it almost invariably failed. Cooperation is a word that is used very glibly by most of us and really understood by

few of us. Cooperation means that every man associated in the industry shall share equitably in the control and in the profits of that business.

We must organize the producers in the country into local associations. If the producers will organize themselves as they have in some sections of the country, good and well; but I think it will have to be done systematically. We shall need men who understand what cooperation means to go out into the country and organize these different units. Make a law so that a company or a number of men associating themselves together for cooperative work will have to subscribe to certain rules and regulations, and do not let every fakir that comes along get in under the name of cooperation. If they use the name cooperation, compel them to come in under this law. When we have our local association it may need a shipping station, it may need a cold storage plant; in the development of the work it may require an evaporating plant. You may require a plant for taking care of different kinds of waste and excess matter, but that is something that will develop. Then we have to have our central agency in the city representing all of these cooperative units and being controlled by them. This agency will keep every unit advised as to the condition of the market, products and kind of products required, and this not only in the City of New York but of Philadelphia, Pittsburg, Boston, etc. The central agency would simply look after the selling. This thing is being done over in Denmark as a business proposition. It cannot be done in any loose-jointed associations, but must be done in an association where every man is a part of that unit and has some function and some duty to that unit. He must live up to it. It will not do if some commission man comes along and offers you one per cent. more than the association, to throw the association down and go to him. You have to pledge yourself at the beginning to sell your produce through that organization. In that way you will be doing cooperative work and will succeed.

MR. WARD: Is Senator Roosevelt's bill broad enough to cover that?

MR. DILLON: Senator Roosevelt's bill is not intended for that purpose; it is intended to regulate the sale of goods through commission merchants. But a bill is in preparation that would pro-

vide for the organization of such companies. The intention is to prepare a law by which farmers may — not compel them — organize under the term cooperative the same as men may organize in business.

THE PRESIDENT: Let me suggest, Mr. Ward, that you are opening up a great topic and we have addresses coming along this afternoon and again tomorrow, and as this topic develops we shall be able to see our way out.

We were to receive this afternoon the report of the Committee on the Development of Agricultural Resources. I was very sorry to receive a telegram from William Cary Sanger, chairman of that committee, stating that by reason of illness he would not be able to be here this week. The rest of the committee, I believe, will prepare something to give to us tomorrow.

In the absence of that report we will proceed with our program and listen now to an address on "A Successful Local Cooperative Movement, by Honorable Seth Low, Bedford Hills, N. Y., Ex-president of Columbia University.

A SUCCESSFUL LOCAL COOPERATIVE MOVEMENT

SETH LOW

It may be a surprise to some of you, who have known only of my work in the city, to learn that I have been invited to address you on a subject so important to farmers, as "cooperation." The fact is, however, that in the autumn of 1905, I bought a farm of about 200 acres, in the town of Bedford, Westchester County. Since then I have been conducting a general farm. When my present superintendent, Mr. G. D. Brill, a native of Dutchess County, and a graduate from the four-year agricultural course at Cornell University, came to me five years ago, he said to me: "Mr. Low, it will take five years to place this farm upon its feet." When I closed my books, at the end of October, 1912, the farm had become entirely self-supporting, by which I mean that it had earned enough in cash to meet all charges, including the salary of the superintendent and of the bookkeeper, and to pay, on account of my taxes, insurance, and painting, at the rate of \$360 a year. The farm also pays one-half of the maintenance cost of my electric light and power plant and of my water system. The indications are, that, at

the end of the current farm year (which with me begins on November first), the farm will have begun to pay something on the interest account. I believe that it can be made to earn five per cent. over and above all charges of every kind, on a valuation of \$80,000. I am not sure that we shall not learn how to make it pay even more. We have a dairy herd of sixty head of cattle, and about twenty-five hundred laying hens. We have a young apple orchard of sixteen acres, which is six years old, and a peach orchard of eleven acres, also six years old. When Mr. Brill took charge I had barely fifty acres of land in good tillable condition, and most of that was included in the two orchards. Now I have one hundred and fifty acres of tillable land, all in first rate condition, as the result of draining a swamp of forty acres, and of cleaning the farm of stone. I have a stone-crusher, and have spent between \$17,000 and \$18,000 in breaking up old stone walls and boulders that were in my fields. But in our neighborhood crushed stone can be sold; and I have sold more than \$10,000, in value of this crushed stone, and have on hand, crushed and partially crushed, about \$4,000 worth. When this work is entirely completed, I think I shall have cleaned up my farm, so far as stone is concerned, at a net cost of \$30 an acre, including in this sum the work of my own teams, charged at \$5 a day.

I give you these details, because I want you to appreciate that my knowledge of the farmer's problem is not based upon farming conducted as an amusement, without regard to cost; but upon farming conducted on a business basis. I have had the advantage of whatever working capital was necessary, and what I have done could not be done without capital; but my interest has been to demonstrate, if possible, that capital can be advantageously applied here in the East to the cultivation of the land, if the land is cultivated by modern methods and with good business judgment.

When I first began to live at Broad Brook Farm, which is the name my farm bears, I was unable to buy even a quart of milk, and until I could purchase a cow I had to import all the milk and cream used in my household. I now have a dairy herd of sixty-two cows, and sell practically all of my dairy product in the neighborhood, even during the winter. People now say that I have an exceptionally good market. The market was there before I

was; but nobody took advantage of it. It has grown, of course, with the passing years. The town of Bedford is forty miles from New York and lies outside of the strictly suburban region. It has, however, a considerable population of city people who have bought land there, and every year the tendency on the part of these people to spend the whole year in the country becomes more and more marked. This fact will enable you to realize that northern Westchester, in which my farm lies, is not a typical agricultural country. It is, indeed, in a transitional stage. Roughly speaking, about one-half of the land has been sold to city people, like myself, except that most of these city purchasers have bought simply to obtain a country home, and are not interested in farming. The other half of the land still remains in the ownership of the farmers who used to till it; but because the country is no longer entirely given up to farming, these farmers have lost the market facilities which they at one time enjoyed. As a consequence, Westchester County has practically ceased to figure as a part of the productive area of the State of New York.

In 1880 there were 3,000 farms in Westchester County. At that time these farms not only produced a considerable part of the food used by the families occupying them, but they also produced enough cereals and other crops to be seriously taken into account in estimating the agricultural production of the state. The population in 1880 was 143,000. According to the census of 1910, thirty years later, the number of farms had shrunk from 3,000 to 2,000. The population had substantially doubled, having grown to 283,000. In the same period, the county had practically passed out of the productive area of the State of New York. I base this statement upon the fact that, in 1910, the agricultural department showed for Westchester County both very meagre production, and very incomplete returns. The county covers an area of 346 square miles. A good deal of the land is stony, and some of it is swampy; but after all, it is, as a whole, capable of producing good crops, if the land is intelligently handled. Of course, much of the increase in population in the last thirty years, is due to the growth of such cities as New Rochelle, Mount Vernon and Yonkers; and to the gradual filling

up of the territory in the neighborhood of the City of New York, including such towns as White Plains, Rye and Port Chester on the Sound; and Tarrytown and Ossining on the Hudson. I submit, however, that there is something abnormal in a situation in which the population increases, while at the same time, the agricultural production of the county decreases; for the increase in population has taken place largely in the organized communities of the county. One would have been apt to say, therefore, that the increase in the number of consumers, right at the doors of the farmer, would have bettered his market and have increased production. Exactly the contrary has happened. The Westchester County farmer has lost the market he used to have, and the Westchester County communities get most of their vegetables and other supplies from the City of New York, precisely as though they were a part of the city itself.

There are some who say that the reason why farming cannot be profitably conducted there is because land has increased so much in value that the farmer cannot afford to cultivate it, and can better afford to sell it. Within limits, this may be true. That is to say, it would doubtless be hard for a farmer with small capital, to earn on many Westchester farms as much as he can realize from them by selling the property to city people for country homes. But this generalization is true only in part; for every farmer is not able to sell his land, and until he does sell it he ought to be able to use it profitably. Perhaps he does, in one way or another; for I am always impressed by the well-to-do appearance of the farm houses in all parts of northern Westchester through which I drive. The productivity of the farms, on the other hand, is very small; and, under proper conditions, it ought to be very large. It is intolerable to believe that the mere neighborhood of the City of New York can permanently take 346 square miles of land out of the productive area of the state.

This is the problem that has been borne in upon me since I have been farming in Westchester County. I have repeatedly asked myself the questions, "Why is it that agricultural land, so near to a great population, is not profitably cultivated; and why is it that this population is fed from Virginia instead of being fed by

the farmer at its doors?" The answer to these questions, in my judgment, is twofold. First, the ordinary Westchester County farmer, like most other farmers throughout the East, buys at retail and sells at wholesale. The second reason is that, under modern conditions, the wholesale market is open to the farmer only upon terms which place him wholly at the mercy of commission men. I suspect that these answers explain the difficulty of profitable farming in many parts of the State of New York, as well as in Westchester County. Both of these conditions can be changed, the first by cooperation, the second by licensing commission men.

In my observation, the ordinary farmer has much to learn before he can succeed, even with such improvement as is possible in the conditions to which I have referred. The late Dr. Knapp, of the United States Agricultural Department, used to say that "farming is one part science, three parts art, and four parts business." The ordinary farmer would do well to increase his knowledge of the science of farming to say nothing of the art. On the side of business management he needs help if he is to succeed; for, to succeed in farming it is not enough to produce. One must be able both to produce economically and to sell advantageously. It is precisely here that cooperation is so important for the farmer; for cooperation ought to do for the small farmer precisely what he cannot do for himself. It ought to give him expert information as to the best crops to raise and how to raise them; it ought to enable him to buy what he needs more cheaply, and to sell what he produces to better advantage; it ought to be able to help him to keep accounts, so that he can detect waste and learn how to improve his methods. In a word, it ought to do for him just what he cannot do well for himself.

In my judgment, cooperation will spell success for the American farmer, in the older parts of the country, precisely as it has spelled success for the farmers of Denmark, and other continental countries. It is the only method by which farmers can reverse the practice to which I have alluded, of buying at retail and selling at wholesale. Through a cooperative society, well conducted, a farmer can buy at wholesale and sell at retail; or, if he

cannot actually sell at retail, he can sell with such expert oversight in the handling, packing, and disposition of his products as will often make the difference between profit and loss. The dairy farmers of Denmark, through cooperation, have captured the London market for butter, at the expense of the non-cooperating English farmer; and, in doing so, the Danish farmers have increased the value of their own lands, and the returns from their farms. A Danish farmer, for example, joins the cooperative egg association. Thereafter, he has nothing to do but produce good eggs, and he receives from the association a better return than he used to receive when he tried to handle his own eggs. On the other hand, the Danish farmer cannot deliver any old egg to the cooperative association. He must bring his production of eggs, in quality, up to the standard of the association before he can profit by its work. But this is easy to do if the farmer has only to deal with the problems of production and of prompt delivery. That is to say, cooperation offers the farmer good business management in buying and selling, and this is the precise thing which the ordinary farmer, left to himself, cannot command. The apple growers in the Northwest have learned the secret, and have captured from the apple growers of New York a large part of our own market for the highest grade of apples. The farmers of Wisconsin are learning the secret, and are more and more forming cooperative associations all over the state. It is hard for us in the East, where the farmers are not used to the system, to learn how to cooperate; for we come of an ancestry whose great merit it was that each one of them could stand upon his own feet. But, if the eastern farmer is again to prosper, we must all of us learn how to work together. There is no help for it.

Four years ago we formed in our neighborhood the Bedford Farmers' Cooperative Association. This association is an ordinary stock company, upon which are impressed some cooperative features. It lacks some of the qualities that are essential to cooperative success in a purely agricultural community. The par value of its shares is \$10, and it began business with five stockholders, each of whom took forty shares. It now has more than one hundred and thirty stockholders, about two-thirds of whom



FIG. 27.— HON. SETH LOW, EX-PRESIDENT OF COLUMBIA UNIVERSITY.

own five shares or less, and one-third of whom own from five to one hundred shares. A few who are deeply interested in the project have taken more than one hundred shares. The present capital is \$25,000. The company did a business the first year of \$27,000 on a paid-in capital of \$2,000. The second year it did a business of \$44,000 on a paid-in capital of \$3,500. The third year it did a business of \$60,000 on a paid-in capital of \$8,500. It now has a capital of \$25,000, and is doing business at the rate of \$100,000 per annum. Most of its new capital has been used in buying an acre of land at Mount Kisco, with a railroad siding, and in the erection on this land of its own warehouse and office buildings, a garage, an apple evaporator and vinegar plant. The apple evaporator and the vinegar plant are related to a piece of constructive work which the association is trying to do for the region in which it operates. The figures as to its business, which I have given, relate entirely to what I may call its supply business. That is to say, to the supplies which it buys for its members, and sells to its members. This is the part of its business in which our experience should be useful to the ordinary cooperative association in a purely agricultural district. No such association, of course, could command the capital which the Bedford Farmers' Cooperative Association can command. Therefore, precisely what we have done is of little value as an example. But some things we have learned, in doing this, which I think are vitally important to be borne in mind by any association of this kind. We have demonstrated, beyond peradventure, that such an association can buy much more cheaply than a farmer who cannot buy in carload lots. The association can buy some things more cheaply even than the farmer who is able to purchase in carload lots; but this is not true as to everything. It may be said, therefore, without fear of successful contradiction that, through well-managed cooperation, the small farmer can get his supplies at least as cheaply as the farmer with large capital. Is not this worth while?

Our association began business by cooperation in buying, because it is the easiest form in which to cooperate. We have not yet begun, in any systematic way, to cooperate in selling, because the agricultural production of our region is almost negligible.

Each year, however, the association sells more produce raised by its members than the year before. The mere fact of being in business enables us to do this.

When our association began business as a supply association, we felt it to be necessary to demonstrate to our members that we could make a saving on purchases. We, therefore, bought our supplies as cheaply as we could, and re-sold them to our members at an advance of six per cent. In this way we made the demonstration complete. But, in this form, we soon discovered that we were conducting business in a manner that was disastrous to the local storekeepers, whose business we did not wish to injure. We, therefore, adopted the plan which is universal, I think, in European cooperation, of selling to our members at the market value, and of returning profits at the end of the year; first paying the current rate of interest upon the capital and making all further division upon the basis of the amount of business done with the association instead of upon the basis of stock ownership. This is true cooperation; and it is vital to the success of this system.

On the other hand, at Bedford, we have not taken one other step which I think is also vital to cooperation in an agricultural community. That is to say, we have not asked our members to buy all of their supplies through the association. This is the case everywhere in Europe. In a small community this would be essential to success; because otherwise the association cannot know how much business it is likely to do, or what expenses it can meet. In Wisconsin they do this, and I am told that they have largely overcome the conflict of interest between the cooperative society and the local store, by absorbing the local store into the cooperative society. Wherever this can be done, and proper management secured, it ought to make the pathway easy. In Bedford we have not wished to do this, because many of the cooperators are men of means from the city, and the work of the cooperative society is not vital enough to any of us to make us willing to injure the storekeepers with whom we are competing. For that reason, all of us buy more or less of our produce from the local dealers, precisely as we used to do before the association was formed. The business competition of the asso-

elation, however, has resulted in making prices in the local stores more fixed, and in causing them to be much more enterprising than before; because now in each small village they have competition, which they did not have before. I wish to repeat, however, that in a purely agricultural community, I think it is essential for the success of a cooperative association that every member should give all of his business to the association. A cooperative association, pure and simple, must control all the business of its members in order to succeed; and no member should permit himself to be tempted from this policy. Many of such enterprises have split upon precisely this rock. It may justly be said that this is the very first condition of success in cooperating. It has taken three years to put the supply business of Bedford Farmers' Cooperative Association fairly upon its feet, because of the absence of this feature.

The other side of our work — what I call the constructive side — is an effort upon which we have entered to restore successful apple culture to Westchester County. It is a natural fruit region, as anyone can see who drives along the highways, but the old orchards have been neglected, and are rapidly dying where they are not already dead. Bedford Farmers' Cooperative Association, in view of this situation, has thought that it could render no better service to our neighborhood than to try to restore apple culture to Westchester County on terms that will enable it to compete with the best producing regions of the United States. To this end the association has employed an apple expert, whose advice is available for all its members. This last year, the association has taken care, in whole or in part, of twenty-one apple orchards in a region ten miles square; and it has erected the apple evaporator and vinegar plant of which I have spoken, in order to be able to make use of the poorer qualities of fruit, while the best quality is being slowly developed. It will doubtless take three years, and perhaps more, to put this part of our business on a self-sustaining basis. The present year has been a singularly hard one in which to begin, for the apple crop in the Harlem Valley was hardly more than a tenth of a crop, while very low prices have prevailed for apples by reason of the very large crop produced in the country as a whole. This sort of service to the

neighborhood, however, appeals to our membership, since almost all of the city residents of Westchester County have apple trees; and every one of them will be glad, I think, to produce apples if they can be relieved of the business side of the care and production of them, and if it can be proved that they can get from their apple trees more than it costs to maintain them. Some things we have already proven through this year's experiment. We have shown, for example, that even this year we can sell really fancy apples at profitable prices.

One other thing my experience in farming in Westchester County has taught me. I put it in the words of one of my neighbors who has been growing apples for a number of years. He says that he has made shipments of apples, every now and then, to commission merchants in New York. Almost invariably the first shipment has done well, and the second shipment very poorly. He says that he never has been able to find out how the great City of New York knew that his second shipment was not a first shipment! Now, he says, he never makes more than one shipment to any commission merchant, and he begins with A and goes through the list to Z. I am far from wishing to imply that there are no honest commission merchants, but every farmer in the state knows that there are some dishonest commission merchants; and we all know that as things are now, we are practically, absolutely in the hands of the man to whom we consign. We are helpless if our shipment is reported out of condition or off in quality. This is a situation that ought not to continue. The state, in my judgment, should license all commission merchants who are authorized to deal in farm produce; and the terms of this license should be such as to protect both the commission merchant and the farmer from misunderstanding and from fraud. I have no doubt that the commission merchant, on his side, would be able to bear eloquent testimony to dishonest packing and other unworthy practices on the part of some farmers. All farmers are not dishonest any more than are all commission men. What is wanted is a system which will protect the honest commission man and the honest farmer from the dishonest commission man and the dishonest farmer. It is childish to say that things should be left as they are. What is wanted is a bill, such as has been al-

ready introduced into the legislature, to control the business involved in the sale of farm products, in such a way as to protect, through state inspectors, both the commission man and the farmer from dishonesty and fraud. If this bill can become a law, and if the bill for the formation of cooperative associations can become a law, a new day will dawn for the industry of farming not only in Westchester County but throughout the State of New York.

I wish also to say a single word in favor of the formation of credit unions. Mr. Yoakum, in a recent article in the "World's Work," pointed out that it costs the farmers of the United States hundreds of millions of dollars more to borrow the money which they need for the purchase and operation of their farms, than it costs the farmers of Europe to do the same thing. This is because the business of extending credit to farmers, like all other parts of the farmer's business, has been left completely unorganized in this country. The margin of profit, heretofore, has been large enough to make us careless as to these things; but now, the day of necessity is upon us, and we shall be wise if we learn, from what has been done elsewhere, what can be done here.

Mr. Chairman, I say again, as I close, that I am earnestly in favor of the bills now pending in the legislature, in favor of regulating the business of commission merchants in farm produce; of facilitating farmers' unions, to make credit more available to farmers; and for forming cooperative societies, so that the farmer of New York State may have the opportunity, in his own way, and with his own wit, to develop here the system which, wherever it has been tried, has been found advantageous to the farmers of the land. In speaking in behalf of these bills I do not wish to commit myself as to every detail; except to say that, so far as I have examined them, they seem to me to be, in the main, well adapted for their purpose.

THE PRESIDENT: I know that I voice the feeling of all when I say that we have appreciated very much this clear, concise presentation and clearing up in a way of a topic that has been running through all our minds, and I desire to thank Mr. Low personally, as I know the society does, for helping us in this program.

Our next address, by Elmer O. Fippin, Ithaca, N. Y., Professor of Soil Technology, New York State College of Agriculture, while perhaps diverting a little from this cooperative topic but certainly essential in the matter of the development of the agricultural resources of this state, is on drainage. It seems to be true that we have no particular laws upon drainage in the State of New York. They are to-day practically resting on the common law. An attempt was made several years ago to pass a law — or one was passed and declared unconstitutional. Professor Fippin's address this afternoon will set forth the needs of the State of New York as to drainage, and will embody some suggestions as to laws which will make it easier and more practical for us to carry on this work of building up our lands.

NEEDED CHANGES IN THE DRAINAGE LAWS OF NEW YORK STATE

ELMER O. FIPPIN

I am glad to say that our drainage laws and provisions for drainage are not in quite as bad a condition as the chairman might have led you to believe; in fact, they are in better shape than I thought they were when I began to look up the matter for this particular purpose. It seems to me advisable in order that we may have a correct point of view on these things, that I review somewhat carefully the relation of drainage to the public.

In the drainage of wet or swamp lands, as in the utilization of any other natural resource, both the individual and the community are benefited. The extent of land too wet for satisfactory agricultural use, and the increasing demand for farm land, has sharply turned public thought in the direction of such areas and has raised anew the question of how far the state may encourage or aid such improvement and its reason for so doing.

Occasion for public recognition of land drainage. The drainage of wet land benefits the individual by enabling him to increase the use of such areas for more intensive purposes. It enables him to increase crop returns, and it enables him by reason of the increased yields and reduced cost of operations to reduce the cost of production and materially increase profits, with the attendant well-being of the farmer and his family.

The public is benefited by improvement of the healthfulness of the region, by the conservation of its natural resources, by the increased food supply, by the increased volume of business arising from such increased production, and by the general beautification of the landscape.

Wet land is widely distributed in the state and ranges all the way from the most pronounced swamp to those lands which are slightly too wet. They range in area from small tracts entirely within the bounds of one owner to large areas owned in many separate parcels. They range from those hill lands with very little question of outlet to those flat areas where large canals must be constructed for long distances to give adequate outlet.

In this fact of the large area of some tracts of wet land and the necessity of other areas to obtain an outlet across lands owned by another person, arises the first need for statutory regulation of surface waters. The common law simply recognizes the natural flow of water in natural channels and would preserve such movement. Statutory law is designed to modify the common law with reference to surface waters in the interests of the public health and the public welfare.

The legislation with reference to drainage and in recognition of the public benefit it confers, has been of two sorts: First, that which seeks to facilitate drainage by the provision of legal machinery. Such laws provide for the voluntary or compulsory cooperation of individuals to that end. Second, the state has directly contributed financially to the support of this legal machinery and to actual construction of drainage works. This support has been contributed publicly through either local or general taxation accordingly as the benefits were considered to be local or general.

The first type of legislation seeks to aid the individual to secure an outlet for the drainage water from his land by specifically recognizing land drainage as a public benefit, thereby permitting the use of the principle of eminent domain. (Code Civil Procedure, §§ 3357-3397.) This recognition on account of improved health has long existed, but it is only in recent years that drainage for purely agricultural purposes has been recognized as of sufficient public benefit to justify the use of this same machinery.

To make that recognition more clear, an amendment to Section 7, Article I of the constitution was passed in 1894. This amendment provides:

"General laws may be passed permitting the owners or occupants of agricultural lands to construct and maintain for the drainage thereof, necessary drains, ditches and dykes upon the land of others, under proper restrictions and with just compensation; but no special laws shall be enacted for such purposes."

This legal machinery seeks also to aid cooperative drainage work by prescribing the form and manner of cooperation of individuals and the method by which they meet the expense of such construction. All this must be accomplished without abridging the right of the individual under the federal constitution. This is why regular procedure through the courts is prescribed. If this legal machinery to facilitate land drainage is inadequate either in scope or in detail of operation it is open to change. How far that is necessary we shall see later.

In the matter of financial aid the state gives the use of the courts as part of the legal machinery, and further, in the case of benefit from drainage to the public health, the community so affected is taxed to pay part or all the cost of the construction, whether the individual has any direct interest in land or not. On the other hand, while the state has so far recognized the public benefit from land drainage for agricultural improvement as to establish by statute certain methods of procedure, and to give the individual certain public rights in the acquisition of an outlet, it has never given direct financial aid to such improvement either by payment of part of the cost or by loan from the state treasurer. In all drainage work for purely commercial purposes, the cost is assessed against the land in proportion to the benefit received. The owner of wet land must alone pay for its improvement unless it can be shown that the health of the community or its general welfare is improved and that, therefore, the community in its corporative capacity should pay some part of the cost of the improvement. The basis of this limitation of financial aid for commercial purposes is that provision of the state constitution which prohibits the use of public funds or money raised by general taxation for any private purpose. (New York Const., Art. VII, Sec. 1 and Art. VIII, Sec. 10, also Sec. 6, Art. I.) The agricultural

benefits of drainage have been considered to be so largely of a private character as to invoke this limitation. Especially is this true when such wet land is owned by private individuals. This is a very different case than if such wet land were owned by the state so that the state would be improving its own property from which it might later get returns by sale as in the case of land improved by irrigation under the National Reclamation Act.

Existing legal machinery for drainage. In 1909, the state legislature in recodifying the laws of the state passed the drainage law (Consolidated Laws, Chap. 15, 1909) embodying the essential provisions of all preceding laws relative thereto, so far as seemed necessary. Certain sections of this law were amended in 1910 (Chap. 624, 1910), and there was established the primary legal machinery of the state for drainage improvement, either for benefit of the public health or for agricultural improvement or both.

The essential provisions of this law are as follows:

1. Any person or corporation, public or private, owning or affected by any wet land may present a verified petition to the county court, or, in case of land lying in two or more counties the petition is presented to the supreme court. This petition requests the appointment of a drainage commission of three men to make a preliminary investigation of the proposition to drain the wet land in question.

2. If the report of the commission is favorable, the court directs the commission to proceed to have the necessary surveys made and the construction carried out under authority of the commission and its advisers.

3. The commission may permit the petitioners to carry out the construction at their own expense, subject to the approval of commission.

4. The commission is authorized to secure easements for drainage channel or other purposes.

5. In case the commission cannot agree with any person as to the damages or compensation for such easement, they may acquire the same by condemnation proceedings.

6. All easements must be secured and paid for before any construction is begun and for this purpose and for other expenses the commission is authorized to borrow money.

7. The cost of the improvement is assessed by the commission against the land benefited in proportion to such benefit, either by direct drainage or for purposes of outlet of lateral drains.

8. Any person may appeal to the courts if the assessment against his land is unsatisfactory.

9. When finally established, such assessment is reported to the county clerk and is collectible as taxes in from one to thirty annual installments, according to the arrangement of the commission. But any person assessed may pay his assessment in a shorter time.

10. All survey maps, data and a full statement of receipts and expenditures by the commission are required to be filed with the county clerk.

The provisions of this law apply to enlargement, straightening or clearing any natural stream, the lowering of any culvert, or

the construction of underdrains or levees, as well as the construction of new ditches for drainage purposes.

Its advantages are that (1) it uses local machinery and facilities; (2) it invokes the machinery that is legally established for that purpose; (3) it provides a legal and constitutional method of taking private property where necessary; (4) it provides for adequate hearing, appeal and public records; and (5) it provides an adequate method of financing the cost of the enterprise. Where the improvement is sufficiently large, short-term bonds of the towns or corporate bodies are issued, and as such have the standing and advantage of public loans. We, therefore, have in a sense a public loan for purposes of agricultural drainage.

There is another route by which such improvement may also be accomplished. This is by petition to the State Conservation Commission established in 1911. (Consol. Laws, Chap. 65, Art. VIII.) In this case the conservation commission instead of the local courts are made the over-head machinery. Instead of having a local commission, investigations are made, and any necessary surveys and construction are done by or under the supervision of the engineers of the commission, and at the end they apportion the cost against the land benefited in proportion to such benefit. So far as practicable, the same procedure is followed by the conservation commission as by the court commission. The cost is met by an issue of drainage bonds by the commission which may run for any period up to fifty years. Such bonds are exempt from taxation, and are made legal investment for trust companies, savings banks, etc.

There is no advantage or financial aid conferred by the latter procedure over the former. The conservation commission is likely to take cognizance of only the larger proposition, and in such case may be the preferable agency because of the advantage of its corps of experienced engineers and perhaps the longer period permitted for financing the enterprise, thereby reducing the annual cost.

Maintenance of drainage ditches. For the repair, clearing or enlargement of any established ditch, the supervisor of each town is constituted the water commissioner to whom any person liable for assessment may apply to have the repair made. If, after investigation, the supervisor finds the repair or enlargement neces-

sary he may proceed with the same either directly where the cost is estimated at less than \$500, or by the employment of an engineer and by public contract if the sum involved is estimated to be more than that amount.

The cost of such assessment is apportioned in the same ratio as the original assessment, unless only a part of the system is involved, in which case it is divided as the conditions seem to warrant. This seems to be a reasonable and satisfactory provision for the maintenance of public drainage ditches, and we find no basis upon which to suggest change.

Still another method of procedure for the acquisition of better facilities for the outlet of drainage water is by reference of the matter to the town fence viewers (Town Law, Sec. 121). The fence viewers for the arbitration of the matters in dispute are selected by the parties concerned, and when so selected their decision is made binding in a court. This is most suitable for the more mild difficulties and is an important provision since it establishes a simple and inexpensive method of settling many disputed questions in drainage improvement.

Modifications and Rulings. The chief contention against the machinery of the drainage law has been that for small projects it is too cumbersome and expensive to be invoked by the average farmer. Especially is this true since the farmer needing the drainage is likely to have very limited financial means to carry through the necessary petitions and court proceedings. We believe these difficulties have been unduly magnified due to the fact that the method of procedure and probable cost is not thoroughly understood. It should be very clearly noted that the active operations of the commission may cease after the preliminary report and that from that point onward the petitioner may carry out the surveys and construction under the general supervision of the commission.

Another point is to be noted and is especially opened for discussion. The opinion has been held in some quarters that where an easement is acquired by condemnation proceedings and the necessary damage paid, the person so objecting could not be assessed for any part of the cost of benefits he may derive from the ditch. This is manifestly unfair and such a ruling would open

the way for all sorts of trouble. Recently the opinion has been given informally that the same assessment would lie against such land as against land of any other person benefited but who may not have joined in the original petition. (I say I desire especially to open the point for discussion by those of legal training.)

If it can be held that such assessment can be made, it gives to any man possessing wet land the right to institute proceeding both to obtain an outlet on another's land and to oblige his neighbor to pay some fair share of the cost of that improvement, whether it be the clearing and deepening of an existing channel or the construction of a new channel for open or underdrainage purposes. Just here, perhaps, occur more troublesome questions than in any other part of drainage legislation, namely, to adjust differences of opinion and financial responsibility involving outlets.

Of course a person always has recourse to a suit for damages if any act or negligence of a neighbor causes the undue accumulation of water upon his land, and it becomes a matter of establishing the fact of such damage in court.

One of the most discussed questions is that of public aid for land drainage. As stated above this is proposed to take either of two forms: First, actual grants of money. This is done where the health of the community is involved, but the range of such aid is limited to the range of improved health in the community which is often difficult to establish. Second, provision for the loan of money to individuals or permission to use the public credit and exemption privileges in recognition of public benefit. The extent of this type of aid must be determined by the extent to which public benefit is recognized. It is one thing to recognize public benefit for the purpose of invoking legal or cooperative machinery. It is quite another matter to turn over money from the public treasurer to a particular enterprise.

In this connection, there has been much interest in the provision of the Canadian law relative to public loans for drainage and other purposes. Under the provision of the Tile, Stone, Timber and Drainage Act, any farmer wishing to drain his land may apply to the town council for a loan for such purpose. The town council, after investigation, issues debentures which are pur-



FIG. 28.—PROFESSOR ELMER O. FIPPIN, NEW YORK STATE COLLEGE OF AGRICULTURE.

chased by the Province from the Consolidated Reserve Fund. The money is repaid by the borrower in twenty years at the rate of \$7.36 per year per \$100 of loan. Such loan constitutes a first lien against the land. This amounts essentially to a long-time loan financed by the farmer and passed upon by the township council which acts in an expert advisory capacity.

In New York it may be questioned whether we have not similar possibilities for aid. As pointed out above, when several persons join in the organization of a drainage district the cost of the improvement is assessed against the land by the court-appointed commission in proportion to benefit. This benefit is recognized as a public one to the extent that the town or other public corporate body is authorized to issue its bonds and use its credit facilities and privilege for the aid of the improvement. The bonds may be refunded from time to time until the obligation is met in the usual channel. Essentially the township extends its credit to the persons or lands involved in the improvement.

The question may be raised whether any single individual who seeks to drain his land and invokes the cooperation of a regular drainage commission and accepts their assessment, may not fairly be entitled to the same guarantee of the need, reliability and probable results of the drainage improvements, and thereby receive the aid of this public, long-time credit.

There is one further need which is very evident to one studying the legal machinery of our state with reference to drainage. There are civil engineers and lawyers to guide one through their respective paths. But drainage for agricultural purposes is essentially a matter of soil improvement in most cases. It involves the effect of drainage on the soil and the relative need of soils and structural conditions of the land for artificial drainage. An engineer may be able to build a channel or a conduit, but it has been shown that he often does not have the requisite agricultural knowledge to know what constitutes adequate drainage for different soil and crop conditions.

Hence there is need to encourage the establishment of more experts in soil drainage and the attendant engineering matters. To a degree it is a matter of education and public guidance. On one hand we would encourage the establishment of drainage

experts on a commercial basis who might be employed by individuals to make drainage surveys and plans and perhaps supervise construction. Such men would be paid entirely by the person employing them. These are coming and two or three are already doing business in the state.

On the other hand, there is need for further investigation and education along the lines of land drainage for agricultural purposes. This means a study of the relation of different soils to the need for drainage, the extent and location of such soils, methods of drainage, drainage coefficient, the permanency of established drains, study by surveys of the benefits to be expected from drainage as a business matter, and finally in connection with these investigational matters there may well be the provision of an advisory or educational agency to guide communities in securing the maximum benefits from all these legal and technical provisions. The University of Wisconsin maintains in connection with her College of Agriculture, members of the staff to fulfill these public investigational and advisory functions. The United States Department of Agriculture gives a limited amount of similar aid, although we believe it is better given from some more local source.

Summary.—In conclusion then, it may be said that:

1. The public benefit to be derived from land drainage warrants the provision of the legal machinery which the state has made.

2. This machinery seems adequate to meet the situation so far as it can be done within the established rights of the individual.

3. These provisions are less complicated and expensive than many persons believe, and often need not be carried entirely through.

4. There is urgent need of an authoritative ruling on the right of assessment against land where easement is gained by condemnation.

5. There is already some recognition of drainage as a public benefit and some public financial aid is given thereto.

6. It is an open question whether that public benefit is sufficient to warrant the extension of the same privilege to single individuals that is now extended to them collectively.

7. The private and institution drainage expert or adviser should be encouraged.

VOICE: What recourse would I have if my neighbor dumps water on my land?

PROF. FIPPIN: If he dumps water on your land unfairly, that is, if it is not a natural course and if you can show damage, then you have a case for collection of damage.

VOICE: It is natural drainage — so arranged that it makes a bad cut across one of my best fields.

PROF. FIPPIN: If he has the natural fall and is simply modifying the flow within the natural drainage basin, then you have no recourse because you have to take care of that water.

MR. WINTERS: There are a number of farmers here who are deeply interested in this subject and it seems to me it would be beneficial if we could hear from some of them at this time along practical lines.

MR. DEFREEST: In Voorheesville, we have a large territory through which the famous Black Creek winds. This creek often overflows and floods the land. I suppose that it naturally belongs to the state and I have asked heretofore what can be done to clean it out. No one knows. I cannot clean out six or eight miles of somebody else's creek to get drainage for my land, and my neighbor cannot. Where I mowed with a mowing machine six or eight years ago, a cow cannot walk now. The creek has filled in and it backs up; it has destroyed about twenty acres of my land. I should like to know some way to get redress. We are paying taxes and I should like to have my land so I could drain it. I am willing to do it for myself but I cannot do it for others.

THE PRESIDENT: I believe we have with us some representatives of the Conservation Commission, those who are closely in touch with inland waters. It looks to me as though this was an inland water and perhaps if Mr. Moore is here he can answer that question.

JOHN D. MOORE, CONSERVATION COMMISSIONER: This subject of drainage is one which has received, and deservedly so, the careful consideration of the engineering staff of the Commission. But the discouraging feature of that portion of the work has been the almost complete lack of response on the part of that portion of the

public which we have tried to benefit. There are in the State of New York something like 275,000 acres of reclaimable land which might be turned into value to the extent of something like \$15,000,000; but the workings of our laws are so ponderous that it does not seem possible to make any substantial progress in that direction.

Now, we have in the treasury of the Conservation Commission almost \$3,000 that we have not been able to spend hunting up new trouble in these drainage matters and it gives me great pleasure to put that \$3,000 at the disposal of this society or any particular faction therefrom. We made investigations in the Wallkill Valley where much arable land could be reclaimed, and in the western part of the state, and everywhere with the most complete lack of any evidence of cooperation. The Canaseraga Creek, which is being improved to the extent of \$200,000 by our Commission, has been a mechanical success from the standpoint of draining the land. When we consider that an enterprise of this scale is new in the East and in the hands of men who have not the benefit of previous experience and training in that particular direction, the degree of success is most praiseworthy. For instance, last July a very vicious cloudburst occurred in the upper stretches of the valley and when the rain began to fall in torrents the farmers above telephoned to the folks down below to get the cattle off the lower ground or they would lose everything they had. But when the floods came down to the excavated portion of the creek, the channel was able to take care of them completely and the land which under previous conditions would have been overflowed, was as dry as a bone. I have been up in the valley many times myself and our assistant engineer, who has been with the project since its inception, tells me that land that two years ago could not be crossed is now being cultivated.

We can do that elsewhere just as well. To be sure the law ought to be changed; but at the same time somewhere in the state there should be some region where everyone wants something done, where they can submerge and sink their differences so that by all pulling together we can go ahead on better and more productive work in the future. I hope some members of the society will take this under advisement and see if we cannot find some

place where we can make surveys out of our funds — preliminary surveys — and start a tremendous movement to reclaim fifteen million acres of land now sunken under water.

MR. ANDERSON: What was the actual cost per acre for improving the land near Canaseraga Creek?

MR. MOORE: It will be about \$20 per acre. The total fund was \$200,000 and we are satisfied we can do it within the appropriation. The land is worth easily over \$100 per acre, some would run as high as \$125 per acre.

HON. J. W. WADSWORTH, JR.: I am somewhat familiar with this arrangement at Canaseraga because I live on its banks. The air line, as I remember it from the figures, is about 14 miles. The creek travels in its natural bed something like 34 miles. It is a fact that a great many hundred acres of land near Groton Station had not been worth \$10 per acre and had gradually grown up into waste land because the water coming down in the spring floods never got off the land until too late to put in a crop. I am informed that along the lines already suggested, although the work is practically only half completed, substantial improvement has been shown.

The Commissioner has indicated that difficulties have been raised by the property owners in the neighborhood. This is true to an extent that has aroused the minds of many of us who wanted to see the work done. It may be said, I think, that this is the first time anything of the sort has been undertaken on any large scale in the State of New York. It involves the reclamation of some thousands of acres and it is not at all unnatural that some people should be suspicious as to what they are going to get out of it. We had many complications and it required an additional act of the legislature for every one of the six years I was a member of it trying to perfect that law and make the work practicable. Some have stood in the way and we have adopted various ingenious methods to get around the difficulties, as suggested by the Commissioner. The public sentiment of the community, however, is certainly back of this proposition and we all look now for its ultimate success. It ought to furnish an example to communities similarly situated, for if some provision of law could be made that would do away with the idea that the state may only

embark through its Conservation Commission in connection with that sort of work where public health alone will be affected, and which would permit the state to lend its credit or moral assistance for the benefit of agricultural resources and true conservation — I think it would be a meritorious act of the legislature.

PROF. FIPPIN: It seems to me the statements that have been made here illustrate very well the fact that what we need more than anything else is more education. The statement that they did not know what they had to do is an indication that our laws are not understood. It is certainly true that when these matters get into a lawyer's hands they are made about as hard to understand as possible. In the matter of possibilities for drainage, however, it should be clearly pointed out that the laws on conservation, as well as on drainage, provide for the recognition of the benefits from drainage for commercial purposes. The drainage law in language specifies "for agricultural improvement." The conservation law adds public health — either the public health or general welfare. My interpretation of the term "general welfare" is that agriculture comes within it. It is the broadest term we can apply. The amendment to the consolidated drainage law originally included the term, or used the term "agricultural improvement" or "general improvement." Somewhere in the enactment of that law the general welfare clause was dropped and it was limited to agricultural improvement. So far as farmers are concerned that is sufficient, and both laws do provide for the recognition of agricultural drainage as sufficient recognition.

I see a gentleman here in the room I should like to hear from on this subject.

MR. WHITE, OF IONIA: I have had very little experience in carrying out the provisions of the drainage law. Last summer I was appointed chairman of a commission for draining a piece of swamp land, some 800 acres. Under that act there is apparently no difficulty at all as to the drainage of a piece of property in which a number of people are interested. In this connection I will say that in order to make it doubly certain we got a certificate from the health officer in that territory declaring it was for the benefit of public health, so we could get away from all chances of complications. We are working along that line and

I have not gone into the thing far enough to know whether we would have run across any obstacles if we had not taken that precaution.

The mode is very simple. The members interested petition the court for a commission to be appointed. The commission proceeds, viewing the lands and determining whether it is proper to drain them. If this commission decides it is proper to undertake the work, we advertise or give notice to all interested parties — I think ten days or two weeks for a hearing — after which time they have the right of appeal. When they have determined that the law provides that the engineers should go ahead and make a survey, it should be filed, when the work is completed, in the county clerk's office in the county in which the work is to be done. The commission is very autocratic in their powers. They go ahead and condemn and take the right of way as far as interested parties have petitioned. You cannot go beyond the last petitioner. So in doing any such work it is very necessary that you have a petitioner as far up in the watershed as you want to go so as to get to the source of the water. After that they can either let the work by contract or go ahead and do it by hiring help, as they see fit. Then it is absolutely within their powers to make assessments against the properties. They also have the right, by permission of the court, to borrow such moneys as are necessary to pay the bills of the commission as they go along. After the work is completed they make requisition upon the supervisor of the town or towns in which the work is located and issue bonds, or provide bonds, to spread over a term of years not to exceed thirty assessments, or it can be assessed all at one time; but any of the land owners have the right to pay their assessment in full at any time. After the commission finishes its work the supervisor of the town becomes water commissioner and it devolves upon him to see that the drains are kept open.

I think the law for that particular line of drainage is ample. It seems to me that we need provisions to cover such as tile drainage. As I understand it the state is not empowered in any way to assist any individual effort along that line; we are not in position to do anything, as in Canada, that will require any state assistance.

MR. SCHRIVER: I happen to live in a county where we have a number of thousand acres of lowland. We have had experience with this commission business and when the gentleman said that it has autocratic powers, he is speaking very correctly. When he talks about its unlimited ability to make expense, he is talking correctly. In this instance the expenses were so large that it confiscated the property in many cases and turned many people who depended for subsistence on the soil, out of doors. It is a public improvement, but power ought not to be given to any commission to destroy the resources of the people and to confiscate property. While it increases the value of some property it destroys the resources of a great many. There should be some limitation to this autocratic power.

MR. WHITE: The gentleman is entirely right. We have already realized the fact that our powers are so autocratic we have had to study very carefully so as not to create an expense greater than the value of the land to be drained. Some of the lands in that tract are muck lands; others are clay with a very shallow covering, and we found it necessary to be very careful with the expenses connected with that work so as not to make assessments that will confiscate the land. It seems to me that there are unnecessary expenses along some lines which could be eliminated. The engineers claim \$3.50 to \$7.50, while we found our expenses would run about \$1.75 per acre for the engineering work. It seems to me there is some engineering work required under the statute that is not really essential. Another thing in that law which ought to be changed is the scale under which the engineers work; working to hundreds, etc., is not in accordance with the statute. When you come to preparing the map for recording, it has to be made under the old system, by links and chains. This necessitates making an altogether different map for filing.

MR. WINTERS: It is perfectly evident and has been for some time that our drainage work in this state has not quite come up to the expectation and the needs of the farmers. I believe we ought to be able in some way to get closer to them and if possible solve some of the drainage problems. We have here three organizations that are working along this line, the Conservation Commission, the College of Agriculture and the State Department of

Agriculture. I am wondering if it would not be wise at this time for the President to appoint a committee of three, one from each one of these three organizations, and see if we cannot get the work in better shape so that our farmers can take more advantage of it.

THE PRESIDENT: You have heard the suggestion of Mr. Winters — I do not know that it is in the form of a motion. I am sure everyone will see the desirability of the men at Cornell who are studying the proposition, the Conservation Commission, and some of the real farmers getting together on this topic.

Motion was made and carried that the President appoint an advisory committee consisting of a representative of the Conservation Commission, a representative of Cornell University and a representative of the Department of Agriculture to consider these questions with the object of working out and harmonizing laws in reference to same.

(For committee see page 1225.)

Meeting adjourned until 8 p. m.

EVENING SESSION

Meeting called to order by President Sisson.

Prayer by Rev. Alexander H. Abbott, Emmanuel Baptist Church, Albany.

THE PRESIDENT: Nothing is more gratifying to those who have been attempting to do for the agriculture of the state what they might than the sympathetic interest that has been taken in our work by those in high authority in the state. The time has come when men of affairs, financiers, leaders of thought and legislators understand that agriculture must be considered as a great public movement and not in the interest of farmers alone, or even primarily in their interest; and that we have the intelligent sympathy and cooperation of such men is a matter of congratulation to our industry. On that account, as well as personally, it gives me great pleasure to introduce to you as your presiding officer this evening the Honorable Martin H. Glynn, Lieutenant-Governor of the State of New York.

MR. GLYNN: Some weeks ago I was asked to preside at this meeting. This afternoon my good friend, Mr. Huson, told me that I would be expected to make a speech in addition to presiding. I have always had my opinions about the presiding officer who made a speech when he was asked to preside. I have thought that he ought to be hung, like Haman, high on a gibbet; that to him should be done what Woodrow Wilson wants to do to the men who are cornering all the things on earth. And so I am going to disregard Mr. Huson's injunction about making a speech, although I am going to say a few words which are not a speech. Your chairman has said that it is high time men in high places take an interest in agriculture. I am glad he said agriculture, because that makes us agriculturists and not farmers. During the recent campaign, Governor Sulzer used to say that he was going to buy a farm. I have heard him say he was going to buy a farm in eight or ten counties in this state. Then I offered to sell him one down in Albany County. So I am ahead of the Governor in that respect, that I do not have to buy a farm. I own one I am quite willing to sell if I can find someone who will pay me a good price. That is the reason I am here tonight. I want to learn something about farming—that agricultural credit system appeals to me. I want to learn how to raise some money on the farm if I have to in some day to come. I was born on a farm—all politicians say that; but I was. But I left it when I was quite young. Some years ago when I had some money and did not know what to do with it I bought a farm. I have a lot of chickens, ducks and some horses, and in that farm I have a six-acre lawn, which keeps me pretty busy.

But seriously, I want to say that I am interested in agriculture, that I believe any man in public life, no matter to what party he belongs, owes it to himself, to his party and to the people of the state, to do everything within his power to promote agricultural interests. The high price of living must drive that home to every thoughtful man. In the granite building across the hill I am a proxy member of the Senate. I cannot vote. The lieutenant-governor does not have a vote, and so I would be unable to cast a vote for any legislation that you may want. But

I know many of the senators — have a speaking acquaintance with them — and if Mr. Huson, Mr. Sisson and Mr. Conant will tell me what they want I will agree to pass the word and give them the wink and word on the sly, and perhaps that may be as effective as the votes of some of the men on the floor.

I have some opinions myself as to what should be done in agriculture. I am a modest man — Governor Sulzer used to say that, so I can say it here — and I do not like to boast about the medals I have won and the credentials I have; but in my home on Willett street one of the things in which I take the greatest pride and to which I have referred every time I ran for office, is the fact that I have a nice letter up there from a number of grange societies thanking me for the stand that I took in the fifty-sixth congress on the oleomargarine question. And in front of me among you sits your good friend, Mr. Tucker, who remembers the stand I took in that fight. Long before that I was interested in agriculture, and I am interested now.

I believe that what we ought to do in this country, is to adopt the system that France adopted in 1879 and teach agriculture in every school in the land to a more or less degree. Now I do not mean by that that we ought to try to make farmers out of every boy in the land. That is not the purpose of it. When we teach grammar in our public schools we do not expect to make every boy an orator. When we teach algebra we do not expect to make every boy a great astronomer. When we teach bellés lettres we do not expect to make every boy a poet. But when you teach rhetoric you interest the boy in the fine writings of the world; when you teach poetry you interest him in the production of the master poet minds of the world; when you teach mathematics you interest him in the business affairs of the world; and when you teach agriculture in our schools, although you do not make every boy a farmer, you make him more or less interested in agriculture, and when you do that you promote the cause of agriculture and you promote the cause of humanity. Men pay no attention to the things they know not of. To interest a man in a thing you must tell him something about it, and when a man learns something about a thing he becomes interested. For that reason if agriculture is taught in our schools, as it is taught in France,

this country would find people interested in agriculture not only on the farms but in the cities, in the lawyers' offices, in the doctors' offices, in the editorial rooms of the newspapers; and all that would redound to the interest of agriculture and the interest of the people of this state.

That is the big thought that I have always had in my mind about agriculture. We think in this country that we are in the lead of all the rest of the world in a lot of things, but we are far behind France in that respect; we are behind Denmark in that respect, and we are behind Portugal; and it is about time we, who are waving the stars and stripes and claiming to lead the procession of civilization in all things, ought to awaken to the fact that we are behind in agriculture. Some of our sister countries in Europe are ahead of us simply from the fact that they have placed agriculture in their schools on the same high plane that they have placed rhetoric, poetry and mathematics; and I, for one, am in favor of doing that in our state.

Now, my friends, it is my pleasure to introduce to you a man who will give you a real address on agriculture, a real farmer, Mr. George W. Sisson, who will deliver the annual address of the president of the New York State Agricultural Society.

ANNUAL ADDRESS OF THE PRESIDENT

GEORGE W. SISSON, JR.

To the Members of the New York State Agricultural Society:

I have the honor to present to you my first annual address as president of your society:

At the close of the agricultural year of 1912, and standing at the threshold of another year big with possibilities, it is well for us to review briefly the occurrences and accomplishments of the past year, and measure as best we can the progress in the agricultural development of the state.

We have come to know that the agricultural development of a people or a state does not mean merely increased production from the soil, but includes all those things which make for the stability, permanence and profitableness of agriculture, and the improvement in the social condition and education of the people engaged

in it. Viewed from this standpoint, the year 1912 may be justly said to have marked a distinct step in advance.

CROP PRODUCTION

As to crop production in New York State the past year, the average yield of all crops combined is 115 per cent. and compared with the average yields of recent years, 105 per cent. The average yield per acre of oats was 4.4 per cent. greater in 1912 than in 1911; of barley, 4 per cent. greater; of hay, 22.5 per cent. With the same acreage of hay the production was nearly 1,100,000 tons greater. The average yield per acre of corn, buckwheat and potatoes was greater in 1912 than in 1910 or 1911, and greater than the average for the past ten years. The percentage of increased production per acre in 1912 over the average of the past ten years was: Corn, 19.8 per cent.; buckwheat, 19 per cent.; potatoes, 17.7 per cent.

With the exception of Pennsylvania, New York produced more buckwheat than all the other states in the union. New York produced more potatoes than any other state, 38,160,000 bushels; and nearly as much as the adjoining states of Vermont, Massachusetts, Connecticut and Pennsylvania combined.

New York produced more hay than any other state and nearly as much as the adjoining states of Pennsylvania, New Jersey, Massachusetts and Connecticut combined.

Figures of production and money value of farm products in both state and nation run into stupendous figures, and Secretary Wilson's grand total of nine and one-half billions of dollars as the farm production of this country for 1912, might lead some to the belief that our farmers are rolling in wealth and are themselves primarily responsible for the increased cost of living. But if even these great figures are used in arriving at the average production of the average farm, the net return to the individual owner will be found so small as to give little encouragement for investment.

Most of our agricultural education so far, and the tendency of the extension work of our agricultural colleges and schools, farmers' institutes, and other like agencies, has been to teach the farmers greater crop production. But I fear that this phase of

our business has been held so closely to our eyes that we have not caught the broader outlook and the wider field that we must explore and occupy if we are to be of most service, not only to ourselves, but to the ultimate consumer of our products.

Aside from the production of abundant crops, we must very properly concern ourselves in the economic problems of their transportation and distribution to the consumer. We must do this first in self protection, for having once produced a pure and wholesome article of food, for the quality of which the state holds us more or less responsible, we should demand that those other agencies that intervene between the farms and the consumer, shall be held equally accountable for good service, careful handling and delivery in good condition to the consumer; and even more, we should see that this is done in a manner and by methods that eliminate every unnecessary expense or unfair profit, to the end that the consumer's needs may be served at lowest possible cost consistent with fair prices, commensurate to the cost of production. Producers of farm food stuffs of all sorts have given too little thought in the past to these problems of transportation and distribution, and just now they are receiving a great deal of attention as very important factors in the high cost of living.

The whole problem of marketing, and market facilities and agencies needs most careful study and a thorough overhauling. We know abuses exist, we know that methods are too indirect, and that there is too wide a discrepancy between the price we receive and the price the consumer pays, but how shall we correct this? Here is a broad field for cooperative effort on sane and practical lines. We have heard this afternoon of one successful example in cooperative marketing, and a most important contribution to the success of such movements will be the report of our Committee on Cooperation which has made special studies in this field, and will bring to us plans which are practical and workable. These reports and discussions which are to be given to-morrow, should have your earnest attention and careful thought.

THE LABOR SITUATION

Farm wages in the state have slightly advanced during the past year, especially for married men. The increasing difficulty in

securing adequate and competent help for farms led to the establishment of the Farm Labor Bureau, which during the past fiscal year has furnished to the farmers of the state 4,067 single men, and 135 families. Since the bureau was established in 1905, 32,652 single men and 775 families have been secured for the farmers of this state. Never since the establishment of the bureau has there been such a demand for help, and scarcity of good help as during the past year. A large proportion of the people sent out have been distributed in the agricultural counties nearer New York City and Albany. From the information received as to the satisfaction given by the help sent out, it is shown that about 70 per cent. were perfectly satisfactory, while 15 per cent. more were fairly so.

During a number of years recommendations have been made for the establishment of branch offices in various cities throughout the state. Such an office has been established in Buffalo. Since the establishment of that branch, on April 1, 1912, it has furnished the farmers of central and western New York with 400 single men and 29 families. The farmers of that section have highly appreciated this assistance. The practical benefit of the Farm Labor Bureau has been well demonstrated, and it would seem wise to extend its work as rapidly as possible.

COUNTY FARM BUREAUS

A movement undertaken the past year, and which promises much in placing our agriculture on a business basis, is the establishment of the county farm bureau in many counties of our state. This is a cooperative movement under the joint auspices of the Bureau of Plant Industry, U. S. Department of Agriculture, the New York State Department of Agriculture, and the boards of supervisors of the various counties, all of which contribute to a fund for the salary of a trained farm expert, whose entire time is devoted to the solution of the local farm problems.

To quote from the prospectus of this work as sent out by the office of farm management: "The ultimate aim of this work is to secure on every farm in the country the system of farming to which each farm is best adapted when all conditions have been taken into consideration; such systems as will give opportunity

for profitable employment for a maximum proportion of the year, and in which each enterprise followed will give satisfactory returns for the time and equipment devoted to it."

"The work will be in charge of a trained agriculturist who will conduct farm management field studies and demonstrations among the farmers of a given locality. He will acquaint himself as rapidly as possible with the general agricultural conditions of the locality, study the various types of soils, the crops that have been found to be best adapted; and the types of farming that have been most successful on each type of soil. He will spend his entire time in the interests of improved farming in the section, studying the methods and practices of the most successful farmers who are following the various types of farming. He will visit the farmers on their farms, study their plans, and aid them in formulating better plans. By the time he has become acquainted with each farmer in the locality, together with the type of farming he is conducting and the methods and practices that he uses, he should have acquired a knowledge of the agriculture of that locality which will enable him to quickly analyze the situation on any farm he may visit, detect defects in the cropping systems and general management, and at the same time note any improvements that may exist over methods in common use. Such a study will enable him to advise the farmers in the establishment of better cropping systems on their farms, in the intelligent selection of better live stock, better seed, and better markets. He becomes an agricultural advisor to the farmers of that section and his opportunities for broad study of general conditions enable him to understand better than any one else the way in which the agriculture of that locality should be directed."

The success of the few county farm bureaus that have been in operation during at least a part of the past year, has been such that more than twenty counties of this state have taken steps toward securing an organization. The counties of Broome, Jefferson, Tompkins, Herkimer, Oneida, Clinton and Chemung have complete working organizations. Niagara and St. Lawrence counties will begin the work March first, and Washington County, July first. Local interest and local financial support, at least in part, will insure that sympathy and cooperation so necessary to

its best success. We recommend the extension of this movement as rapidly as is consistent with proper management, and the supply of properly equipped men will permit.

AGRICULTURAL EDUCATION

Our society may well feel gratified and the entire state grateful for the splendid results in the development of a coherent and effective state policy for agricultural education that has come largely upon the suggestion and initiative of this society. The past year has seen noteworthy advances in the introduction of agriculture into our public school system, and the report from our efficient Committee on Agricultural Education to be given tomorrow will set forth somewhat in detail the progress of this work.

It is worthy of note and indicative of the trend of the times that various colleges and universities in the state are, of their own volition and entirely without state aid, beginning to give instruction in agriculture.

A division of agriculture has just been established at Syracuse University with a full four years' college course in agriculture. The president of your society is a member of the advisory board of this college. The extension of this movement may bring up the question of state support to such colleges and universities, and it may become necessary to give this matter consideration in the near future.

PUBLICITY WORK

As was pointed out last year, it has not been possible through lack of funds to take advantage of many opportunities for making known to people here and elsewhere the wonderful possibilities for agriculture in our state.

Full credit should be given to our State Department of Agriculture for much that has been done with limited funds. A liberal appropriation was made by last year's legislature for a New York State exhibit at the Land Show in New York, but it failed to receive executive approval. However, Commissioner Huson was able with some volunteer assistance from outside interests, to make a very creditable and attractive showing of the diversified agriculture of the state.

THE WORK AND REPORTS OF PERMANENT COMMITTEES

Our Publicity Committee again brings us a report replete with valuable suggestion, but again showing plainly the need of funds if results are to be obtained. They suggest — "that the chairman of the Publicity Committee hereafter be a paid employee of the state and in the department of agriculture under the direct supervision of the commissioner; that he devote his entire time to New York State agricultural publicity; that such publicity work include the editing and sending out to newspapers of the state articles of interest on agricultural subjects prepared in the form of plate matter for their convenient use; the preparing of magazine articles and advertising, the suggesting of plans for exhibits of New York State agricultural products in the different states; the conducting of a big Land Show in New York City devoted exclusively to New York State and articles made from New York State agricultural products, and illustrating subjects and matter pertaining to New York State agriculture."

This definite suggestion brings up in concrete form the question of the relation of our society to the state and its place among the various agencies and activities in our agricultural development, including the State Department of Agriculture.

First, the New York State Agricultural Society does not desire to usurp any function of any established agency or department. My conception of the true function of our society may best be illustrated by the work and results of our convention that was held three years ago, when studying particularly the topic of agricultural education in this state. That convention was unique and marked an epoch in things agricultural for this state. Here was a broad question of general interest to which was brought the best thought of the state and nation, and out of careful counsel and diligent planning came a solution both harmonious and effective. This is "efficiency engineering" of the best type as applied to an agricultural problem.

This is the day of universal good will toward agriculture. There is a wider appreciation among men of affairs of the fact that agricultural development is primarily a great public movement and must be viewed from considerations of the general welfare. Hence we find springing up on every hand new agencies, move-

ments and activities, a chaos of ideas and suggestions, some nostrums, some ideal but visionary, some practical and promising. Here lies the opportunity and duty of this society. Annual conventions such as this, devoted to thoughtful consideration of unsolved problems that vitally affect all the people and are pressing for proper solution, are sorely needed. Preparation for such conventions means an immense amount of investigation and study by the appropriate standing committees of our society, and the necessity for funds to make effective their findings and suggestions has been more than once pointed out. Some of these committees bring to us a proposed budget showing the amount of funds in their judgment necessary to successfully prosecute this work. I believe that the character of the work that this society is doing, and the position it occupies in what might be called an advisory capacity toward other agricultural agencies, fully justifies state aid for its work under proper restriction and regulation governing the expenditure of any funds appropriated.

The solution of the economic problems to which we are giving most attention would mean so much saving to our citizens as to warrant state recognition. Hundreds of thousands are appropriated annually to teach our farmers to grow more crops. Why not spend a few thousand in solving the distributing and marketing problems to the mutual advantage of both farmer and city dweller?

The Committee on the Development of Agricultural Resources has a broad field for observation, and brings us, as always, a valuable and suggestive report. In line with its work was the address and discussion on drainage matters given at our session this afternoon. There is little doubt that thorough drainage under a well-defined system would mean as much in increased production of New York State lands as has irrigation to the soils of some western states. This state has many undeveloped agricultural resources and possibilities which it is the business of this committee to bring to our attention with their suggestions as to development or conservation.

Bearing in mind our general topic of last year, "closer relations between the producer and consumer," it was to be expected that our reports this year from our Committee on Marketing, Transportation and Grievances, and the Committee on Coopera-

tion, would be of intense interest. These reports bear out this expectation, the Committee on Marketing bringing definite plans for permanent, continuous work in the great market of New York City, and an estimate of funds required for the work.

During the past year there has been completed a most valuable investigation regarding the prices of agricultural products and methods, and facilities for marketing same. Members of this society, among them the chairman of our Committee on Cooperation, have had much to do with this investigation and are familiar with its findings. At our meeting last year, a resolution was adopted instructing the president of this society to call a delegate meeting of interested parties throughout the state, with the avowed purpose of working out a plan of action to bring the country producer and city consumer into closer relation through cooperative methods of buying and selling. In compliance with this resolution, the call was issued and a conference held in the rooms of the Board of Trade and Transportation, New York City, last April. As a result of the conference, a special state committee of 100 on cooperation was named with John J. Dillon as chairman, and this committee has been at work throughout the year. On December fifth, a most important conference of this committee was called to consider certain definite, cooperative propositions, and we shall hear from the chairman of the committee a report that marks the greatest forward step yet taken on these matters in this country.

The Committee on Banking and Taxation is a new committee, whose usefulness will be demonstrated in its study and recommendation regarding the matters which form the leading topic of this meeting.

The Committee on Legislation has most important work before it. Proposed legislation to open up the way for the organization of cooperative buying and selling associations; legislation regulating methods of marketing food products; improvements and amendments to the agricultural law, must receive their careful scrutiny before they are given the support of this organization.

OUR TOPIC AND PROGRAM

As most of us know, the European systems of land mortgage, banks and rural cooperative credit societies, which have proved

to be of such assistance to agriculture there, have been under careful investigation by representatives of our State Department at Washington; and at the recent conference of governors, this topic of "farm finance and rural credit" was one of the most interesting features of their discussions.

Students of public affairs, bankers, financiers, leading farmers, legislators, and editors of the agricultural press are so convinced of the value of this movement that there is practically no disagreement as to the desirability of the adoption of the best features of European practice; but, of course, with adaptation to American conditions.

There is no doubt that lack of capital, and excessive interest rates, have interfered with the agricultural development of this country. Had our farmers been given a little financial education along with instruction in mere crop growing, and been taught how to secure and use credit, it would have stimulated them to associated action, give them a commercial instinct, and by aiding cooperation in every way, enabled them to become their own merchants, buying supplies at wholesale and selling produce direct.

The establishment of agricultural cooperative credit associations is largely a matter for state legislation and encouragement, and it is hoped that out of this meeting and conference may come clearer ideas and some well-considered action.

Lieutenant-Governor Glynn, President of the State Fair Commission, honors us by his presence and by presiding to-night; and Governor Sulzer has kindly consented to preside at our session to-morrow night. This indication of sympathetic interest in our work is highly gratifying.

The Commissioner of Agriculture, Mr. Huson, who will address you to-night, has personally, and through his department, given most valuable assistance in making this meeting a success.

Our speakers on the principal topic are recognized as expert students of the subject — Mr. Charles A. Conant, of New York, who addressed the recent governor's conference on this same topic, and who speaks to-night; Mr. Harvie Jordan, of Atlanta, Ga., Chairman of the Finance Committee of the Southern Commercial Congress; and Professor E. W. Kemmerer, of Princeton University, who speaks to-morrow night. Honorable Seth Low, of New York, gave a most practical and suggestive paper this after-

noon, and our program for to-morrow has rich things in store — reports that will excite lively discussion, I am sure; addresses by John J. Dillon, of New York; Dean H. E. Cook, of Canton; Dr. Finegan and Mr. Dean of the State Department of Education; and Mrs. Julian Health, President of the Housewives League, of New York, whose address should be heard by every woman in Albany.

In closing, I again direct your attention to the desirability of greater coherence and unity of action and endeavor among the many popular organizations in the state devoted to agriculture. The multiplicity of isolated meetings and conventions held in different parts of the state and at different times entails great extra expenditure of time, money and energy. It is becoming increasingly difficult for our farmers to attend even those conventions where their special interests lie.

Considerations of efficiency, economy and greater results demand some federation of these societies, and an arrangement of their meetings in some way that will mean no sinking of the distinctive individuality of any society, but rather a broadening of the horizon of each and an opportunity for wider usefulness, and greater definite benefit to the whole agricultural movement in the state.

I recommend the appointment of a committee empowered to call a conference with like committees from other societies with a view to definite action along the lines indicated.

Our society hopes to be of real benefit to the state. Its officers and members are imbued with the spirit of unselfish service and helpful cooperation, and our greatest satisfaction will come in the feeling that our conferences and efforts have brought about improved conditions for the general welfare.

President Sisson read letters relative to the subject of the meeting, from Morris Eagan, United States Minister to Denmark, and Myron T. Herriek, Ambassador to France; and referred to a letter from Sir Horace Plunkett expressing regret at not being able to attend the meeting.

CHAIRMAN GLYNN: It is now my pleasure to present to you Charles A. Conant, Esq., Banker of New York, who will speak on "Land and Agricultural Credits."

LAND AND AGRICULTURAL CREDITS

CHARLES A. CONANT

The problem of agricultural credit is perhaps the most important which confronts the country to-day. Agriculture is the basis of all life, and the pressure of population upon the food supply is beginning to be felt from the highest to the humblest home. We have something to learn from Europe in this respect. We have sailed along rather well under the impression that everything in our country is superior to anything in other countries; and in many respects this is true. Our breadth of ideas, our freedom of speech, our great natural resources, have enabled us to do things without injury, or without serious disaster, which could not be done by a country where the margin of subsistence is narrow and where the struggle for life is more keen. But we are beginning to realize that we have played rather fast and loose with our great natural resources, and that we are in danger, if not of falling behind our European competitors, at least of raising the cost of living to a point very hazardous to the continuous development of a healthy and efficient population. We are already reaching out to foreign lands for our food supplies. We are sending a hundred ships to Central and South America to bring us bananas, oranges and other fruits. We are sending our capital to Argentina, Paraguay and Uruguay to find cattle ranges to supply our demand for meat products.

Inevitably, as these conditions have intensified, there has been an effort in this country to study the reasons why our soil is less productive than that of some other countries and why the price of living is so steadily rising. The problem of the cost of living lies largely in this question of the ratio of food production to population and the efficiency of farm methods. We have waked up to the fact that our soil is capable of producing many times the amount of the past, if we apply intensive and intelligent farming methods. You have doubtless heard or will hear from other speakers during this convention, of the great efforts being put forth by the Department of Agriculture at Washington to increase the productivity of farm lands. I was amazed myself to hear at the convention of the American Bankers' Association the statements of one of the representatives of that department

as to how in the South, where more effort has been expended perhaps up to now than in the West, even young boys who were taught scientific methods of cultivation were able to increase the product of an acre from 14 bushels of corn to 60 bushels. We must apply ourselves to these methods if we are to maintain our great population and to maintain our national economic position. Otherwise, the heightened cost of living will intensify the struggle for existence in all callings — those apart from the farm as well as on the farm — and we shall go backward in the scale of civilization and economic development. Inevitably for this new phase of farming evolution there must be a larger application of capital than in the past. Farming must be reduced to a business as sure and as carefully calculated as the manufacturing and distribution of products, and in order to do that there must be capital applied not only to the productive power of the farm but to the methods of distributing its products.

In an interesting article by Professor Kemmerer, who is to address you to-morrow, he pointed out that the average value per acre of farm land in the United States increased from \$15.57 in 1900 to \$32.40 in 1910; that is, an increase of more than 100 per cent. in average value in ten years. Mark you, not the value of farms as a whole, which have increased in a slightly greater amount, but the average value of farm land per acre, has doubled in ten years. In farm implements and machinery the total investment — not the average per farm — increased from about \$500,000,000 in 1900 to \$1,265,000,000 in 1910, or an increase of 150 per cent. Now I give these figures because they have a direct bearing on this problem of improved methods of credit. They put the farmer in the position of a capitalist. If already he possesses this billion and a quarter of capital in the form of machinery and implements, then he is in a better position to borrow than in those remote times when he had no such investments or when they were limited in amount. In other words, his means of borrowing are increasing as the necessity for the widening of the scope of his efforts is developing. He must follow other industries in speeding up the efficiency of his machinery, in applying business methods and economies to his methods of production.

As I have said, this can only be done with capital and the farmer has to face, in the question of finding capital, two different classes of demand — first, the necessity for long-term credit, and second, for short-term credit — the long-term credit to add to his area of cultivation, clear the ground and prepare it for culture; the short-term credit to tide over intervals between crops, to supply him with ready money during the period while he is waiting to harvest his crop and reap the proceeds of it. In Europe they have dealt with both these problems. They have been compelled by the very necessities of their situation, by the political and economic competition between nations and by the struggle for existence, to apply the most intensive capacity of the finest men to develop the farming resources of the country. As has been said by a previous speaker, France has instituted agricultural education. In Germany the system of local cooperative credit societies dates back to the time when the land was laid desolate by the long and bloody wars of the great Frederick. But in Germany the development of the form of society which reaches down to the small farmer is comparatively recent. It is so in Italy, where one of their greatest masters of finance has worked out the problem of credit for the new Italy. In France the present organizations of local cooperative credit date back hardly further than 1894, and as recently as 1897 the bank of France was required to set aside out of its surplus some 40,000,000 francs, or about \$8,000,000, to be loaned without interest to certain agricultural societies for the benefit of the farmer. And that amount was doubled to \$16,000,000 in the recent revision of the bank charter in 1911.

In all these countries firm steps have been taken toward the organization of local cooperative credit among the farmers. In France perhaps more perfectly than in any other. But in the other countries also — in Germany, Austria-Hungary and Italy — there was organized at a somewhat earlier date effective machinery for extending credit for long terms. We have no such machinery in this country. You farmers can mortgage your farms now and then when somebody has exactly the amount that you want to borrow, but your mortgage in the custody of the lender is not a convertible security. He can only sell it when he finds

another man who has exactly the same amount to invest and who knows something about the farm and is willing to make a long-term investment. But in Europe, through the *Crédit Foncier de France* and through the similar institutions of Austria-Hungary, Germany and Italy, farm credit is converted into almost as readily negotiable security as the stocks and bonds of our great industrial and railroad corporations.

How is this done? Simply by organizing a great stock company, its capital constituting only its guarantee fund, loaning to farmers on mortgage through the investigation of the officials of the company and then issuing negotiable bonds against the whole mass of mortgages. The *Crédit Foncier de France* has now, I believe, about \$2,000,000,000 worth of negotiable bonds outstanding; which are, I might almost say, the very best security for the permanent investor on the French market, because their value does not fluctuate. While the money market goes up and down and government bonds sag away when political menace clouds the sky, the bonds of the *Crédit Foncier*, issued upon the land of France, fluctuate almost infinitesimally. They remain practically around par, because they are based upon security which cannot be affected by social revolutions. For that reason these institutions are able to go into the money markets of the world and sell their bonds at the very lowest rate for which money can be obtained for any purpose. The recent issues of the *Crédit Foncier* are at the rate of about $3\frac{1}{2}$ per cent. The rate at which they calculate that they obtain the money is between $3\frac{1}{2}$ and 4 per cent. and they charge the farmer 4.3 per cent. They are not allowed by law to charge more than six-tenths of 1 per cent. to the borrower above the rate at which they obtain the money. In recent loans they have not charged the farmer up to the legal limit, but only enough for administrative expenses and to pay a fair dividend to their stock holders. These bonds, being issued by a company having a capital of \$50,000,000, have the guarantee of that company for their redemption. They rest upon the land, but they have the guarantee of a stock company that the mortgages have been properly investigated, that the bonds are well secured, and that they can therefore be bought and sold in the open market without research as to the security behind



FIG. 29.— CHARLES A. CONANT, NEW YORK CITY.

them. The owner of the bond of the *Crédit Foncier* does not know or care what is the value of the particular mortgage held by the bank. All he knows is that this great company, organized upon sound and conservative principles, loaning by law no more than 50 per cent. of the value of a piece of property, has issued this bond and that its whole great assets — the united assets of hundreds of millions of dollars' worth of French land, and the paid in capital of the company — stand behind it. Therefore the bond sells in the open market upon the stock exchange as freely as railway stock or even the bonds of the government.

The difficulty in this country is that if a farmer in the South or West wishes to borrow upon mortgage he has to find someone who has looked over his farm, investigated the title and knows it is clear. Those who pursue this business find it very profitable. There are several debenture companies in Scotland which loan money in Texas and other southwestern states and pay regular dividends of 8 and 10 per cent. to their share holders. The rate at which they loan to the farmers ranges from 6 to 7 or 8 per cent., without counting the charges when he first negotiates the loan and the charges for renewals. But by appealing to the world's money markets, the French, German or Italian farmer is getting his money at the lowest rates at which it can be found in the open markets of the world, instead of paying the high rate for special investigation and for loans which are not readily negotiable.

A special and important feature of these European mortgage loan banks is the system of amortization. Most of you have heard of that in connection with insurance and perhaps with railroad bonds; but we have rarely seen it applied in this country to land mortgages. It is a system by which a man who borrows upon a mortgage for 75 years, for instance, has the principal of his obligation split up into 75 annual payments, so that almost without knowing it he finds he is steadily extinguishing a small part of the principal of the loan at the same time that he is paying the interest. Seventy-five-year loans form a very large proportion of the loans of the *Crédit Foncier de France*. Fifty years form a great majority; I mean those of fifty years and upwards. Thirty year loans, although a fair proportion, are a small minority.

The so-called amortization on a seventy-five year loan, the amount to be paid on the principal each year, is less than one-fifth of 1 per cent. On a fifty-year loan it rises to about six-tenths of 1 per cent.; while on a thirty-year loan it is about $1\frac{2}{3}$ per cent. Now add those amounts to the interest charged on the mortgage by the French bank, 4.3 per cent., and you find that on a seventy-five-year loan the annual payment is less than 5 per cent.; on a fifty-year loan it is still under 5 per cent and on the thirty-year loan it is just under 6 per cent.

We cannot claim that the institution of a Credit Foncier in this country will at once bring down the rates on loans to the farmer to such low figures as these. But if we can lend money at 5 per cent. instead of 4.3 per cent., as it is loaned by the French bank, and make the proper additions for the amortization of the principal, we shall still find that the burden is a small one as compared to that under which we labor in some parts of this country to-day. It has been suggested that we should organize in each state a land mortgage bank of this character — that is, that it shall have a certain paid up capital as a guarantee fund, but that its main business shall be the sale of bonds in the money markets of the world and the employment of the proceeds of those bonds in loaning on mortgage to farmers. I believe this would be a step forward, but, in order to confer the benefit of the system in its fullest degree upon all parts of the country, it will be found necessary to have a national organization whose prestige shall enable it to borrow money on the lowest terms not in New York alone, but in London, Paris, Brussels and Berlin. A state association would probably be very successful in New York, but we should not be so narrow as to seek to limit the benefits of this system to a single state. If we are to carry it to all the states we must have a central organization which will give the guarantee of its credit and its reputation to the bonds which are sold on the money markets of Europe and here in New York. I fear that a state land bank in the southwestern states offering bonds for the first time on the Paris Bourse would not find many takers; but if we have a national Crédit Foncier, which is able to investigate the conditions in those states and to issue its own bonds in substitution for those of the state association, or to

guarantee those of the state association, so that there shall be one common issue from a central organization in this country, the great reservoirs of capital in the old world as well as in the new will be at the command of the American farmer.

We cannot, of course, transplant any institution from abroad without some modifications. There is one feature about the *Crédit Foncier* which we should not be willing to adopt in this country, especially since the legislation of Governor Hughes, and that is the feature of what is called lottery premiums, by which the holder of one bond of a certain number will draw a special prize when the bond is paid. Anglo-Saxon legislation, at least in modern times, does not look favorably upon lotteries as a means of raising public revenue. It is true also that the *Crédit Foncier de France* has not done as much for the farmer as it might have done. A considerable proportion of its loans are made upon urban and suburban property, and that constitutes perhaps an argument against too great centralization, because the *Crédit Foncier de France*—and that is true substantially I think of the larger institutions of Hungary and Germany—are single institutions, with branch offices of course, but controlled absolutely from the center, so that they have not the local sympathy and do not make the effort for local development which would be made by a local land mortgage bank. If we can combine with the prestige and the resources which arise from centralization, the local interest which arises from a state institution, then we shall get the benefits of both.

I shall not have time to-night to go in great detail into the local cooperative credit associations. Very often, more perhaps than in the matter of the land mortgage banks, it is necessary that local conditions should be carefully studied and that the institution or the form of organization adopted should meet local prejudices and to a certain extent local experience. It is in Germany that these institutions have perhaps attained their greatest development. There the farmers of a given community get together, form a mutual society, turn in what money they have by way of deposit—those who have a surplus—and take that surplus and lend it to their associates. But the loan is guaranteed by the whole society. In some societies the principle

of unlimited liability prevails, every member being bound for all the debts of the society and for the debts of his associates in so far as they have been guaranteed by the society; not, of course, outside personal debts. In some of them the system of limited liability has been found adequate; that is, the liability which arises from the holding of a certain number of shares and assessment upon those shares.

It has been found that in all these German societies, and in Italian societies so far as tested, there is practically never any loss, because the society itself passes upon the character and admission of its members, and even apart from the scrutiny of the personality of the member or applicant and his resources, the scrutiny which follows the loan has produced most remarkable effects — not in Germany alone, but in Ireland where the system has recently been introduced, largely through the efforts of Sir Horace Plunkett. When \$50, \$100 or \$200 has been loaned to a farmer for a specific purpose, he has to specify that he is going to buy a cow, or dig an irrigation ditch, or do something to improve or maintain his farm. When these loans have been made for the specific purposes set forth by the borrower to his associates in the society, every member of that society is pretty apt to be watching his associates to see whether the money is intelligently and productively employed. If a member borrows \$100 to buy a cow, his neighbor is pretty apt to look over the fence and see whether he is treating the cow properly, keeping her in good condition and applying scientific methods to her care and development. In that way there has come about a homogeneity of interest among the farmers which was almost entirely lacking before the system of mutual cooperative credit was introduced. It has created a spirit of friendly competition among the members of the society themselves. In those countries, of course, the members are more tied to the soil than here. They have grown up as children in their neighborhoods and their ancestors before them have lived on the same soil. There is not the immigration or taking up of new areas as in this country; and this factor would have to be considered in the formation of credit societies on the frontier of our civilization. But the results in improving conditions in

European countries have been phenomenal. There has been naturally a study of improved farming methods, a tendency of each member of the society to get the best out of his farm, and a sobriety of character and realization of responsibility which did not exist under the old system of each one jogging along for himself.

I am not going to burden you with many figures on this subject. I believe that in Germany the mutual credit societies have some one thousand six hundred million marks, or approximately four hundred million dollars of assets on their books; that is, they have that much money which has been deposited by their own members, or some of it borrowed, as I will explain, from other banks and loaned to their members. Naturally it developed after a time that these societies did not have in their own localities all the money they needed; other societies had more than they needed; and they began lending to each other and borrowing from each other. Then they formed central banks. By central I do not mean central for the whole country, but district associations. Those district associations, usually made up by the share capital of the local societies, attain a degree of financial responsibility which puts them on a level with other banking institutions; so that if one of these mutual credit banks needs more money, it goes up to the central bank of issue and borrows it. In other words, a district society of this character can rediscount its paper at the Imperial Bank of Germany, the great central bank of issue which controls the exchanges with the world; and in France at the Bank of France, or at some of the great joint stock companies. Those great joint stock banks in turn can discount their commercial paper almost without limit in times of pressure.

We cannot have, probably, a thorough and effective organization of mutual credit upon a large scale until we have a better currency system. The *Crédit Foncier* mortgage bank could go on with very little reference to the state of the currency because it has no obligations, practically, to meet on demand; but the mutual credit societies, which loan for short terms, and which need to furnish ready money to the farmers when they want it, would cease to function or would be embar-

passed if they found that at the moment when needs were greatest, call money in New York had risen to 20 or 30 per cent., and that New York banks could not rediscount any paper for the local agricultural credit societies. So that, while the two problems stand in a sense apart, the problem of a sane currency and the problem of mutual credit, yet they are in some degree interrelated, just as the question of currency is in fact interrelated with the business of every man, even the humblest laborer, if he wants to draw his pay in currency instead of some form of credit paper, as he had to during the panic of 1907.

There must be, before the system of mutual credit can be fully developed, a system of sane and sound banking at the center. That need not prevent the beginning of the organizing of mutual credit, because it will hardly reach magnitude enough to become a serious factor before the problem of a sound monetary system will be solved. But in France and Germany the local district agricultural banks can rediscount at the joint stock banks and the joint stock banks can rediscount at the great banks of issue, which are called either state banks or national banks, but which are different from our national banks. They could employ the resources of the country to enable them to meet the demands of the crop moving season or any special pressure. Those banks are substantially without limit in their powers, because with their hands upon the foreign exchanges, their ability to control the discount rate and hence the interest policy of other banks, and their ability to issue notes under certain regulations when they are needed, can tap the resources of the money markets of the world. We could not do that in the panic of 1907 because of the deficiency of our monetary organization. You remember how the Bank of France offered to loan to the banks of New York almost any amount they desired in gold if they would give the guaranty of the government of the United States or of some central banking institution. It was not possible for the government of the United States under its constitutional powers; and there existed in New York no banking institution which could give such a guaranty. Therefore, only indirectly and at heavy expense, were we able to avail ourselves of the resources of France through the medium of the flexible English money market.

You who are farmers and who go forth determined to combat for the improvement of your farms, for the acquisition of credit through mutual credit societies for the purchase of new equipment and the clearing of new land — do not forget that as an incident to all these things you must be a supporter of monetary reform, which will give safety and flexibility to our entire credit system.

CHAIRMAN GLYNN: “The Agricultural Law; Its Improvement and Enforcement,” will now be the subject of an address by Honorable Calvin J. Huson, Commissioner of Agriculture.

THE AGRICULTURAL LAW; ITS IMPROVEMENT AND ENFORCEMENT

CALVIN J. HUSON

The agricultural law constitutes chapter one of the consolidated laws of the state. It is a compilation in part of a large number of independent legislative enactments covering a long period of time and a wide range of subjects. These were revised, and such of their provisions as it seemed wise to retain, and various new provisions, were consolidated and reenacted in a single act, being chapter nine of the laws of 1909, which, with some amendments subsequently made, constitutes the agricultural law of the state today. This law, of course, has mainly to do with agriculture and agricultural products. It reaches out, however, in many directions and covers many subjects indirectly connected with agriculture. It may be stated in a general way that its purpose is to raise the standard of agriculture in the state, to provide means for making our farms more productive and our crops more bountiful; to search out by rigid inspection disease in plant and animal life and prescribe and apply the remedy; to stay the ravages of insect pests that threaten destruction in field, orchard and vineyard; to do and perform, in fact, those numberless things the farmer, either singly or collectively, is unable to perform, on the theory that it is to the interest of all the people of the state that our great agricultural interests should be promoted and the production of our food products stimulated and their healthfulness safeguarded.

There is no subject pertaining to agriculture of greater importance than those relating to our dairy interests. The production of dairy products of various kinds constitutes by far our largest agricultural activity. More people earn a livelihood from it, more capital is invested in it, than in any other branch of agriculture. The value of the dairy products produced on New York State farms is nearly \$100,000,000 per year, and the supply is barely keeping pace with the ever increasing demand. Greater New York consumes two million quarts of milk every day in the year, and the other cities, towns and villages of the state require a proportionate quantity. If the milk, butter and cheese consumed by the people of our state is hereafter to be produced on New York farms it is necessary that the production of these necessary articles of food should be stimulated by every means within the power of the state. Better methods must be devised and promulgated, the standard of the dairy cow must be raised, the small producers of our dairy herds must give way to those more productive; in fact, all the problems must be studied and solved in order to increase production without adding unduly to the cost. And these are some of the things that the state is attempting to accomplish.

Important as it is that we should be sure of a stable and generous supply of dairy products, it is perhaps of even greater importance that such supply should be kept pure and wholesome, ensuring the health of our citizens and of a standard as to quality that will protect them against fraud and deception. And so the state has by legislative enactment established standards and prescribed rules and regulations covering the conditions under which our dairy products must be produced. These are deemed necessary not only for the protection of the health of the consumer but equally for the protection of the honest producer. If all milk dealers would keep their cans, bottles or other receptacles clean and wholesome there would be no need on the part of the state of their inspection. If all milk were produced under ordinary sanitary conditions and delivered to the consumer in the same condition as when drawn from the cow there would be no need of sanitary inspection or chemical analysis to detect adulteration. It is by reason of the fact that a comparatively few men, both

producers and dealers, are careless or indifferent or dishonest, that rules and regulations are necessary for the protection of the public as well as that great body of honest dealers and producers.

Closely allied to this subject are the provisions of the law relating to the health of our dairy animals. It would be useless to devote the energies of the state along the lines already indicated unless the animals from which our milk supply comes are in such a physical condition as to ensure a safe and healthy product. And so the state has adopted a plan for the purpose of protecting our dairy animals and eliminating from our herds such animals that by reason of disease are unfit to constitute the source of our milk supply. That tuberculosis exists in our dairy herds to a greater or less extent must be conceded. It is the plain duty of the state to adopt such plans as experience or science may suggest to minimize or wholly eliminate danger to our people from this source. It has been doubted whether the state pursued the wisest course when it adopted the policy of making compensation to the owner for such animals which by reason of this disease were deemed unfit and dangerous as a source of milk supply. But that some compensation should be made for such animals as may be condemned as dangerous and slaughtered, now, however, seems to be the settled policy of the state. Men of science are generally agreed that the tuberculin test will disclose with reasonable accuracy the animal suffering from this disease. Where this test is applied by veterinarians in the employ of the state or by those whose work is approved, the reacting animals may either be segregated and their milk pasteurized before use, or they may be slaughtered by the state. The tuberculin test has been applied to 30,000 dairy animals in the State of New York during the past year; a large number, involving a vast amount of work and the expenditure of a very considerable sum of money. There are, however, more than a million and a half of dairy animals in the state; so that, with all the resources available for this work, only 2 per cent. of the entire number was reached. It will thus be seen that the task in which the state has embarked is a most gigantic one and that the progress made has been necessarily comparatively slow. In view of the importance of this question, men representing all shades of belief and points of view have been en-

gaged in studying the problem involved for the purpose of devising some plan that would result in more progress in this direction. Men of science who are competent to speak on this subject, tell us that in their judgment a physical examination of all the dairy herds of the state will disclose a very large percentage of the animals suffering from this disease, the milk of which is dangerous and which are a menace to the herds in which they are located; it therefore has been suggested that the time has come when the state can take a long step in advance along these lines and provide for a compulsory physical examination of all the dairy herds of the state, for the purpose of eliminating at once such animals as are a source of danger to the public health. If this is practicable and these animals can be eliminated, very much can be accomplished toward ridding the state of this disease and preventing its spread to the healthy animals in the herds. It has not been proposed that we tamper or trifle with the tuberculin test as now provided by law, but if, after all the physical cases are removed from the dairy herds, the tuberculin test is then applied to the remaining animals which do not disclose any sign of the disease as the result of a physical examination, the animals found reacting as the result of such test can then be removed and there can be no question, if this can be accomplished, that we will be practically free from this disease in our dairy herds. In order to prevent the further spread of the disease it has been suggested that the skimmed milk and whey, the by-products of our butter and cheese factories, should be pasteurized before being used as food for calves, pigs or other animals. It is believed that the use of milk and whey from these sources has been a prolific source of the spread of this disease, and it would be an idle thing to take from our dairy herds the affected animals unless we adopt a policy of prevention for the future. I do not believe that tuberculosis exists in New York to a greater extent than in any other state. Indeed, I believe we are very far in advance of most states in the work the state is accomplishing in combating this disease. I believe that our milk supply is as pure and wholesome and that our butter and cheese is manufactured under as sanitary conditions as prevail anywhere in this country. But our dairy interests are of such tremendous magnitude, by

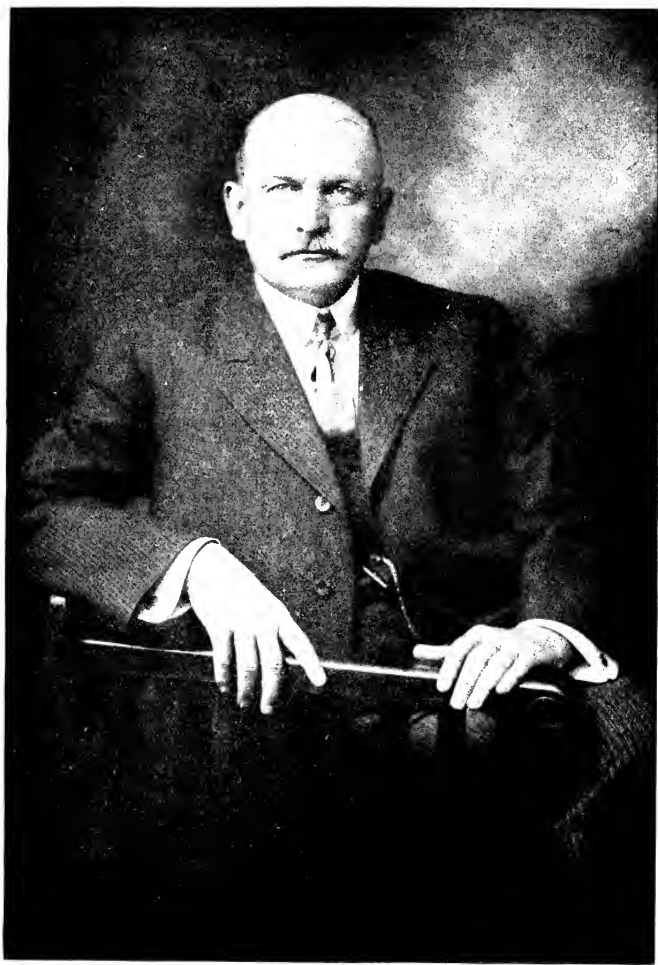


FIG. 30.—CALVIN J. HUSON, COMMISSIONER OF AGRICULTURE.

reason of our rapidly developing markets, and are capable of such unlimited extension, that the great State of New York can well afford to occupy advanced ground upon this subject, to the end that the standard of our products should be raised every year so that the consumer, whether within or without the state, may be assured that the products produced on New York State farms are of the highest standard attainable.

In this connection I desire to call your attention to what appears to be a much needed amendment to the law governing the manufacture of cheese. Recently, as you may have noted by the papers, a considerable number of people in one of the cities of the state were made seriously ill by eating cheese supposed to be manufactured in the State of New York. It is practically impossible to trace this particular cheese to its place of manufacture, for it appears to have been unbranded and there was nothing to indicate its source of manufacture. As the law now stands, a manufacturer of cheese may register his product with the department of agriculture and that brand must appear upon each cheese manufactured by him and placed upon the market. This, however, is optional rather than compulsory, and a very considerable quantity of cheese today is made in this state and placed upon the market without any distinctive brand. I believe the law should be so amended that it would compel every manufacturer of cheese in the state to procure a brand and that it should be plainly stamped upon every cheese sent from such maker, in order that in case of trouble like the one to which I have referred, the source can be traced and remedied. If such an amendment were adopted, or if under the present law consumers of cheese would insist on being served only with those bearing the New York State brand, they would be reasonably assured of securing a full milk cheese manufactured under sanitary conditions.

The agricultural law also has to do with our vast horticultural interests. I believe the nursery inspection system of the State of New York to be the best that exists in any state, and it is doing very much toward protecting and advancing the horticultural interests of the state. An orchard or a vineyard may be planted in our state with reasonable confidence that the state will protect against insect pests or fungous diseases destructive to

plant life. The law requires that every shipment of tree or plant that comes into the state from outside its limits must be inspected by a trained expert in the employ of the state before being distributed within the state, and if diseased or if eggs of insects are found therein, the state causes the destruction of such shipment.

The state also undertakes to prevent the adulteration or misbranding of food and food products, and the rigid enforcement of our laws upon this subject has done very much toward raising the standard and ensuring the purity and healthfulness of our common articles of food that must be found in every home. Severe penalties are provided for the adulteration or misbranding of any article intended for human food. Mixtures, compounds, combinations or blends, provided none of the ingredients are deleterious to health, are permitted provided that the package in which they are contained bears a plain statement of the different constituents of such article. Upon this subject the law of the State of New York is in advance of the much-advertised national food and drug act. Under the federal law such articles may be placed upon the market provided only the label shows that they are mixtures, compounds, combinations or blends, while under our law the different articles making up such combination or blend must be stated so that the purchaser may know precisely what is being served to him.

The agricultural law also regulates the sale of vinegar, paris green, turpentine, linseed oil and a very large variety of other products, not the least important of which are those provisions of the law regulating the manufacture and sale of commercial feeding stuffs and commercial fertilizers. The law provides that every brand of commercial feeding stuffs or of commercial fertilizers shall be licensed by the state, and every sack of these articles that is placed upon the market shall contain branded thereon a statement of its weight and the character of its contents. The law requires that the department of agriculture shall, at least once a year, take samples and submit them for chemical analysis, and in case the analysis shows the article is deficient in any of the necessary ingredients, proceedings are commenced for the collection of the penalty prescribed for the prevention of such fraud upon the purchasers. The results are published in bulletin form and sent

broadcast throughout the state so that the consumer may know what the manufacturers are doing. If purchasers of these commodities would confine their purchases to those concerns whose products are honest products and fully up to the guaranty upon which they are sold it would aid very much toward relieving the state of its supervision over these articles. But a great many of the consumers are careless and indifferent, and it seems to be substantially as easy for a concern whose analysis is habitually below the guaranty to sell its products as those whose products are always up to the guaranteed analysis.

The state has recently undertaken the inspection of farm seeds. This imposes a new duty upon those charged with the execution of the agricultural law. If certain kinds of agricultural seeds contain more than three per cent. by count of foul or foreign seeds, the package, bag or sack containing such seeds must be plainly marked so that the purchaser may know the percentage. The state undertakes to secure samples of all such seeds placed upon the market and to submit them to analysis for the purpose of ascertaining their grade of purity.

These are a few things the state has undertaken to do for the interest of its agriculture and for the regulation of its agricultural production. That it requires the employment of a considerable number of men and the expenditure of a large amount of money, however economically expended, must be apparent. The needs of the state in carrying out these various activities in which it is engaged cannot be measured by the amount of money appropriated for such purposes this year, last year or the year before. The work is constantly expanding and becoming more complex year by year. The agricultural interests of the state deserve well at the hands of the law-making body of the state. New activities are being developed from time to time requiring the expenditure of money and the employment of skilled men.

The question of developing a plan of cooperative marketing of farm products, of organizing farm bureaus in the various agricultural counties of the state, of regulating the sales of goods through commission men, and various other plans for the betterment of agricultural conditions, are being constantly worked out. It is not, therefore, a question as to how little may be appropriated, but

rather how much can be intelligently and economically expended for the purpose of developing the agricultural interests of the state, and I desire to assure Lieutenant-Governor Glynn that during the few weeks that are to follow we will have occasion more than once to call upon him for that friendly wink and nod he has so generously promised us when our bills come before the senate.

Meeting adjourned.

TUESDAY, JANUARY 14**MORNING SESSION**

THE PRESIDENT: There devolves upon me the duty of appointing a few committees at this time. By resolution passed yesterday afternoon I was instructed to appoint a drainage committee,— one representative from the Conservation Commission, one from the Department of Agriculture and one from Cornell University, and I will appoint as that committee Honorable John D. Moore, Professor E. O. Fippin and Assistant Commissioner Harry B. Winters.

It is also necessary, on request of our treasurer, to have an auditing committee to go over his accounts, which is perfectly proper. I will appoint as that committee C. R. White and William Hayden.

On motion the president appointed a committee on resolutions to which all resolutions when offered are to be referred, as follows: H. O. Palen, Highland; T. B. Wilson, Hall; Dr. W. H. Jordan, Geneva; W. N. Giles, Skaneateles; John J. Dillon, New York.

The following nominating committee was also appointed: F. W. Sessions, Utica; Ezra A. Tuttle, Eastport; M. C. Burritt, Syracuse; C. Fred Boshart, Lowville; Reverend Brother Barnabas, Lincolndale.

THE PRESIDENT: The committee matters being taken care of we will now listen to the report of the Committee on Legislation, by Honorable C. Fred Boshart of Lowville, the chairman.

REPORT OF COMMITTEE ON LEGISLATION**C. FRED BOSHART**

An unusual number of important and urgent recommendations for legislation have been presented this year for your consideration. The recommendations presented yesterday have merit; apparently they are urgent and in line with steadily increasing demands of our rapidly advancing agricultural conditions. The chairman of your Publicity Committee presented a very valuable suggestion yesterday for the consideration of this society. There

is no doubt of the wisdom of establishing a bureau of publicity in the department of agriculture, under the direct supervision of the commissioner. It is by honest advertising that the superiority of our farm lands and their products may be better known and appreciated. The suggestion of that committee is entitled to the recommendation and endorsement of this society. We are also heartily in favor of more efficient and effective drainage laws.

There is a strong demand from the consuming public for cheaper food stuffs. To obtain cheaper products we must increase the production of our lands. That will require practical agriculture, and we believe the best solution of the proposition that has come to us is in the establishment of farm bureaus in the several counties of the state. These farm bureau managers will consult the farmers and supply the theoretical part of the farm management, the farmer the practical part; the two working together will increase the production of our lands to meet the needs of the steadily increasing population of our country. The population of the United States has been increasing in a greater ratio than the production of our farms, the result being a tendency to force up the cost of living.

It is the belief of this committee that the society should make an urgent request to the legislature to give our commissioner of agriculture a liberal appropriation to be applied to aid in the establishment of farm bureaus, and thus with the aid received from the government and the contributions made by the county, place the farm bureaus on a substantial working basis.

The purpose of our agricultural laws is to ensure the purity and wholesomeness of our food products. These laws have raised the standard of quality in all commodities grown and manufactured, and should be amended as new conditions and requirements present themselves. This committee is in full accord with our Commissioner in regard to amending the dairy law so as to require every cheese cut and sold in this state to bear a mark of the maker and to be branded for what it is — full milk or skimmed — whatever it may be, and recommend that such an amendment be enacted in law by the present legislature.

We further recommend that this society endorse the general provisions of the bill introduced by Senator Roosevelt regulating



FIG. 31.—C. FRED BOSHART, CHAIRMAN OF COMMITTEE ON LEGISLATION.

commission merchants. We believe that we should have uniformity in the agricultural laws of the several states so far as local conditions will permit, and in the enactments by congress, and suggest that the Commissioner of Agriculture of this state lend his best endeavors to gradually bring about such a condition.

THE PRESIDENT: The chairman of the Committee on Banking and Legislation is not able to be with us, and in addition to that fact the matters we are taking up at this session, which are not entirely clarified in the minds of all, are in such shape that the other members of the committee deem it best to give the matters growing out of this convention more careful attention and scrutiny, and report at a later date on matters of farm finance and rural credits. So we will pass over that report at the present time.

We are now ready for the address on "The Practical Application of Agricultural Credit Systems to American Farm and Market Problems," by John J. Dillon, Esq., of New York, the publisher of the Rural New Yorker. Mr. Dillon was abroad last year and it is very fortunate for this society that one of our members has had opportunity to study at first hand the subjects to which we are giving our specific attention this year.

THE PRACTICAL APPLICATION OF AGRICULTURAL CREDIT SYSTEMS TO AMERICAN FARM AND MARKET PROBLEMS

JOHN J. DILLON

This is a subject that is new to many of us, and none of us have gotten to the bottom of it as yet I think, and anything that we can say is more in the way of a discussion than of a dictum.

During the past year cooperation has been distinguished above other subjects in the volume of printed and verbal discussion devoted to it. Some of the discussion has been intelligent. Much of it serves only to reveal the ignorance of the authors and to confuse the public mind on the subject. Some has the merit of evident sincerity; but a large portion of it has been mere brag, bluster and buncombe. Impressed with the sudden popularity of the subject, designing men have espoused it in some cases to pamper their vanity and egotism, and in other cases to feed their pockets. Men claiming to be inspired authorities on the subject

have already promoted, under the allurements of cooperation, selfish schemes which are to cooperation only what vice is to charity. Such authors must either admit ignorance of the principles of cooperation or confess themselves knaves. To forswear one indictment is to confess guilt of the other. During the last three months no less than two dozen elaborate schemes have come to me for approval. They all bear cooperation captions; but every one of them contained provisions by which the promoter was to reap an advantage that his proposed associates in the enterprise was not to share. Some of the most contemptible swindles of the people, both country and urban, have been promoted under the promise of cooperative benefits; and candor compels me to confess, to the everlasting discredit of the press, that many of these schemes have been, and are now, promoted by publishers in the name of journalism.

Men talk and write about cooperation, and especially about cooperative credits, as if there was some mystery or magic about it; as if it were something unknown to us and foreign to us. They seem to make us feel that it is beyond the comprehension of human minds and understandable only by the inspired or elect. At least one of our instructors has gone so far as to say so in cold type. They take it out of the realm of real things and clothe it with mystic suggestion. They seem to strive to make us feel that cooperation is an Aladdin's lamp which they have only to rub to summon the giant who will produce any wealth they demand. If they would only give us time to think we would wonder what they want of the advance fee always demanded as a key to the occult benefits.

What is this foreign, mystic thing we are to touch only through the consecrated and anointed? I have studied the subject abroad, and I found no principle there that is not already in practical operation here. The only difference is that they have applied the principles to the organization of a definite system of farm credits and farm business. We have not. European countries have two separate and distinct forms of cooperative farm credits,—realty credits and personal credits. They are very simple and easily understood. The realty credits are operated by what is there called the *Landschaften*. It is a society of mort-

gage debtors, who pool their united responsibility to guarantee the payment of debentures which they issue as a registered society to secure money to loan on mortgage to their individual members. They issue no stock. It is the principle of our partnerships applied to land mortgages. Surely we can all understand that.

Land mortgage banks are also used in Germany and other European countries to finance farm mortgages. These are corporations especially organized and safeguarded with authority to issue debentures and to do the work for which they are created. We have similar corporations in this country serving other interests. The only difference is that our institutions are properly organized to make money for their stockholders, and to serve what we call business interests. These European banks are organized, not for profit, but for the convenience and benefit of borrowers on farm mortgages. Surely there is no need of mystic suggestion or romantic figures to describe a simple business of this kind.

The European application of these simple principles is, however, important. To the system itself there are three important requisites:

1. The issue and sale of debentures.
2. The creation of a sinking fund.
3. A small annual payment in addition to the interest, by which the debt is finally wiped out.

To the borrower there are four important considerations:

1. The privilege of contracting a loan for a long term of years, during which the loan cannot be called so long as he pays his annuity.
2. A low rate of interest.
3. Instead of being obliged to pay in bulk at the close of the mortgage period, there is a provision for making small annual payments which puts small savings to immediate profitable use, and which gradually and regularly reduces the debt until the mortgage is finally wiped out at the end of the contract period.
4. While not compelled to pay until the end of the contract period, he may liquidate the mortgage at any time and secure a release of the mortgage contract.

The period of contract is usually optional with the borrower within a limit of from ten to seventy-five years. The annual

payment on \$100, including interest at 4.3 per cent. as adopted by the *Crédit Foncier of France*, is for a

10 year term.....	\$12.40
20 year term.....	7.50
40 year term.....	5.25
60 year term.....	4.66
75 year term.....	4.48

It will be observed that for the sixty-year period the annual payment is about one-third of 1 per cent.; while for the seventy-five year period it is less than one-fifth of 1 per cent. In Ireland the government loans for the full purchase price of the farm is amortized in sixty-eight years at $3\frac{1}{4}$ per cent.—one-fourth of 1 per cent. for amortization.

The *Landschaften* or partnership of borrowers pledging unlimited responsibility, is the purest form of cooperative credit. It is most economical in operation, and failures among them are practically unknown.

The land banks organized under corporate franchises may elect to adopt a charter with unlimited responsibility to members, or it may limit the responsibility to each member by the shares held by him, or to three or more times the value of stock holdings. Where cooperative credit is first adopted there is usually strong objection to unlimited responsibility, but as experience ripens the tendency is to resort more and more to unlimited responsibility. To my mind the difference is not important one way or the other. We already bond our school districts, our cities and villages, our townships, counties and states. In all these cases our individual responsibility is unlimited. On the other hand our building and loan associations furnish examples of a most efficient system of limited responsibility in cooperative marketing of real estate mortgages. The form is not so important, provided the responsibility, whether personal or corporate, is sufficient to cover the obligation beyond question.

The principles under which these land banks operate are familiar enough to us. We have many corporations, good and bad, operating under them in real estate speculations in our large cities. We have one such corporation in New York with a basic capital of only \$100,000, which may or may not be largely water,

with a debenture issue of something about \$12,000,000, and the only cover for these debentures is the equity in city property above the mortgages on the properties which are held by banks and institutions. There are all told some thirty such corporations issuing debentures of doubtful value, which are now being taken up by wage earners and small investors. There are frequent failures, and, of course, the debentures in such cases represent a total loss.

The mortgage bank principle seems to be entirely feasible for our purpose. We could leave it optional with the borrower whether he associated himself with his neighbors in unlimited responsibility, or secured his loan direct from the bank. The society method would be cheapest. Every member is interested to see that the new borrower gets no more than he is entitled to, while the universal sense of fairness with members would secure him a just amount. The other members being responsible for the loan are also interested to see that the payments are made promptly and that the condition of the farm is maintained. These are all gratuitous services, safeguarding the bank without expense to it. On the other hand the bank would have to incur expense in making loans to an individual farmer. It would have to secure an appraisal of the farm, examine the title, and inquire into the moral risk of the borrower, and maintain a system of collection of the interest on the annuities. This expense the individual borrower would have to pay, so that he could not expect to get his loan as cheaply as the member of the society.

In Switzerland they have a system of their own. The borrower makes out an application, giving a detailed description of the farm and something of his own antecedents and conditions. The application then goes to the Canton officials. If they confirm it the bank makes the loan. If the borrower fails to keep his payments and the bank loses, it may go into court to prove that the Canton officials deceived it. If it proves the application was not true at the time that it was made, the Canton must make good the bank's loss. The provision is a useful precaution, but in practice it is seldom or ever used. Losses are rare but the method seems to be cheaper and more efficient than the method pursued by the *Crédit Foncier* in France, where the bank obtains the informa-

tion and supervises the loan itself, but where a large volume of business is carried the expense in either case is insignificant.

It is most important to so safeguard the debentures that they will sell readily to investors and be absorbed at a low rate of interest. In European countries they are as stable as government bonds and carry practically the same rate of interest. The last issue in France was subscribed for eighteen times over. Germany land debentures are absorbed readily by the people. The debentures of Denmark are readily taken in France and Germany. The rate at which the debentures sell regulates the interest rate of the mortgage with a fraction added for expense and amortization. The small annual payment always increases the security of the loan, and the long period relieves the farmer from all anxiety about the renewal of the mortgage. The annuity which finally wipes out the mortgage should be less than the present annual interest charges, which leaves the mortgage to be paid in bulk. Our federal government estimates that \$120,000,000 was lost to small investors of this country in get-rich-quick promotions during 1912. It has estimated nearly as much of an annual loss through the same source for years back, and this without any record or estimate of the losses sustained through similar stock promotions and gold brick ventures of less conspicuous character. I believe that these savings of wage earners and inexperienced investors would be readily converted to these debentures with the result of enormous saving and a steady income to the people. We should make the law that safeguards our own mortgage debentures a protection to the inexperienced investor in worthless stock and promotion schemes.

The cooperative mortgage bank would solve the problem of financing drainage and other farm improvements. It would have a potent influence in keeping many young men on the farm. Many men past middle life, who struggle with the mortgage during their early years, hesitate to assume new burdens for improvements or to start the sons on farms of their own, because of the anxiety about constant renewals of mortgages as well as the expense and high interest rates. But they would hardly hesitate to make improvements that could be safely financed so that the profit and the improvement would liquidate the expense.

Many who could not assume the financial burden for a son who is ready to take up farming for himself, would gladly encourage and assist that son on a farm financed for a long term of years through a cooperative mortgage bank. We must remember that farming is an economic problem and as we facilitate its operations and encourage its business with profits, we multiply and stimulate its productions, and all the arguments and education in the world will fail to keep progressive young men on the farm, or to permanently increase the products of the farm in any other way.

The farmer's assets in lands, buildings and produce are the most stable in the world. His habits of prudence, thrift and industry afford the strongest element of moral credit, yet he alone is without the facilities to finance his business promptly and economically.

A banking system suited to the peculiar needs of the farm is an acknowledged necessity. Bankers and statesmen and economists and students almost universally admit the need of it. Farmers demand it, and it remains only to devise the legal machinery to put it in operation.

With us every business is provided with a system of credits and finance suitable to its needs, except the business of the farm. Let a man propose to build a railroad, develop a mine or start a store, or organize a company for any purpose whatever, the facilities of our banks, and our stock exchanges offer him the means to finance his undertaking.

In the cooperative personal credit systems of Europe we find the same familiar formula as in the realty systems. The original Raiffeissen banks were simply partnerships or local associations of borrowers. They had no corporate entity, and were personally liable for the associate obligations. They had no capital; they were really a protest against capital. When forced by law to register and issue stock they complied with the letter by issuing shares of nominal value. They were limited to a parish or neighborhood, and loans were made only for productive purposes. The banks were managed by the members without compensation; the loans were made for the most part on personal notes with endorsements. The business seems to us petty and juvenile. The

average credits are insignificant, but in the aggregate it runs into important sums. It seems to have worked very well with the small present proprietors of Germany, but I do not think it would appeal to the farmers of America nor do I think the system would serve our purposes.

In Germany they also have the corporate system of cooperative personal credits. This system is known as the Schulze-Delitzsch banks. It is organized on cooperative lines; each member must hold one share of stock. The par value of shares run from \$30 to \$100. They accumulate a surplus, which can be used only to make up losses. Through the membership they accumulate quite a large basic capital, and they receive saving accounts and deposits from members and non-members, and pay interest on them. The rate of interest paid depends on the time the deposit is left with the bank, but it is paid from the day it is deposited to the date of withdrawal. In short they do a regular banking business, pay their officers and employees, and declare liberal dividends. They may organize with limited or unlimited responsibility of members. On the last reports about one-third of the members had limited responsibility charters. They make short-term loans to members usually requiring endorsements or collateral. They also loan on current account, the limit to such a borrowing member being fixed by the members, interest being charged on the amount of credit actually issued from time to time, or credited when the balance is in his favor. In addition to these loans, they discount bills of credit.

We could follow the cooperative credit systems through the different countries of Europe, but we would find the same principles underlying them all, with varying details to suit local conditions. The banks are now regulated by definite and exacting laws and are usually subject to close inspection and regulation. In France and some other countries these banks are federated under regional or state banks, which are subsidized by the government to rediscount the bills of the local banks when need be. Government aid, however, has its drawbacks, and like the land banks the most successful personal credit banks are found in systems that depend entirely on their own resources, and the credit of their members.

The principle of the Schulze banks seems to be well adapted to

American needs. They are cooperative. They may be organized on limited or unlimited basis, and they are broad enough and elastic enough to absorb the idle money of a community and convert it to productive uses in the hands of the members of the bank, allowing the depositor a fair return for the use of his savings, and at the same time furnishing capital for productive enterprises at a minimum rate.

Some men tell us we have already enough credit facilities in the national banks; others say this is nothing but a national bankers' scheme to monopolize farm credits as they already control other business and corporate credits. Both criticisms could not be true, and as a matter of fact neither are true. We have no intelligent system of farm credits. The national banks were organized without a single thought of the convenience of the farm. They are organized properly enough to make money for their stockholders through a service to business, manufacturing and transportation interests. In favored communities I admit these banks may be made to serve individual farmers of means and standing, but they are not allowed to loan on farm mortgages even in their savings departments, and in any case they do not fill the requirements of a rural credit system. Bankers themselves realize this, and admit that the farm requires an independent system of its own through which evidences of farm wealth may be standardized and mobilized. These instruments of credit will be in the hands of the farmers themselves through their cooperative bank, where national banks loan to a farmer now, at a maximum rate, if need be they would loan to his bank at a minimum rate because of the combined security back of the bank bills.

Cooperative credits, however, can render their best service only in connection with cooperative productions, cooperative marketing and cooperative buying. Develop your banks alone and without a prompt and safe outlet for the funds, they will be helpless and useless. Their very success in gathering funds will be their sure destruction. On the other hand the country needs cooperative creameries, shipping stations, packing houses, cold storage warehouses, evaporating plants, canning factories, etc. In most cases it would be a hardship for farmers to put up ready money enough to build, equip and operate these utilities of cooperation; but

your mortgage bank can advance the money to build and equip them on the combined credit of their owners for a term of say twenty years with annuity payments to come out of the profits of the business so that the debt would be amortized at the end of the mortgage period. The annual cost would be about \$7.50 a year on every \$100 advanced. Then when the shipping season came along, and money was needed to move the crops, your credit bank would have sufficient security in the new wealth of the association to make the needed advances. If the individual farmer wishes to store his fruit or other produce until the glut of the market subsides, his warehouse receipt would be sufficient collateral for a temporary loan. This is no fancied theory. There is nothing mysterious or romantic about it. It is merely an outline of a system of business in full operation to-day in other lines of business in every civilized country in the world and the farm application of this cooperative business system is already in operation in the principal countries of Europe. While, as we have seen, the principles of cooperative credits are simple enough, it is not strange that people who have received their information from the mass of confused published matter on the subject in this country, should entertain some erroneous impressions. This confusion has been encouraged by the fact that in some of the European countries cooperative banks have been to some extent subsidized, and otherwise favored by government assistance. This has led to the erroneous conclusion that cooperative credits meant that anyone can join a cooperative society, and can get money out of it or from the government without regard to his material or moral worth. I do not need to tell this assemblage that cooperative credits do nothing of the kind. It is true that England is financing farm mortgages in Ireland in order to revive former agricultural resources of that landlord-ridden country. The French Revolution and foreign wars left the agricultural peasantry in France in such a deplorable condition that the government thought it advisable to organize the *Crédit Foncier* to finance farm mortgages and subsidized it for the purpose. The French government has also subsidized regional banks and charged them with the duty of re-discounting cooperative bank bills; and in two special cases Denmark has furnished financial assistance to associations whose

members are of the poorest classes. But where cooperation has flourished and met its greatest success and development, no government subsidiary has been asked or received. Some societies in France have preferred to go independent of the government aid; and in Denmark government aid is repudiated on the ground that the banks standing on their own resources inspire greater confidence and attract more deposits and easier credits than they would if subject to the suspicion that they could not stand alone without government aid. With our great farm resources we need no government subsidiary, and ask none. If proffered, I for one should oppose the acceptance of it. We ask the government to do for the farm system of finance even less than it has already done for the system devised for other business interests. We ask it only to give us the legal machinery by which we can mobilize and standardize our own forms of credit and market the evidences of our wealth for purposes of credit. We ask less because in times of stress the government places treasury deposits in the banks devoted to other business interests. We do not ask this, but the present banking system is under government control and supervision and we ask even more stringent supervision and control of our system. Let us make our system safe and secure in the confidence of the people through rigid inspection and frank publicity, and our problem will not be to get funds but how to wisely use them.

Cooperation is no Aladdin lamp. Wealth will not spring out of it spontaneously. It is merely a means by which the people engaged in an industry may conduct their business more efficiently and economically than they can do it individually and independently. Through the credit banks if a man has property in any shape and moral worth, the system will enable him to use it as credit for productive purposes at a profitable rate of interest; but every member is under the constant review of his neighbor who has a personal interest in the transaction and the man who thinks to get something for nothing will be disappointed with the cooperative credit system.

Cooperative credit banks encourage thrift in a neighborhood by offering a reward for the use of the savings of the people. It encourages system in business and promptness in meeting obliga-

tions at the cost of membership and benefits. It encourages industry and enterprise by furnishing capital for productive uses and fair reward for intelligent effort and honest work. It tends to increase the average of moral worth in a neighborhood, because no moral delinquent can hope to profit by an institution that is founded on the confidence of his neighbors. Lastly, it increases the intellectual, spiritual and social wealth of a community through the daily contact and mutual interests of the less favored members with associates gifted with culture, refinement and spiritual endeavors.

In conclusion, I want to add to a paper, already too long, that I lay no claim to originality on this subject. Aside from what I could pick up at first hand while in Europe, I have made use of the existent literature on the subject whenever I have been able to find it. There is no Dillon system. The only inspiration I have is the very human desire to help in the establishment of a system that will serve agricultural interest. I reserve the right to adopt a better system than I suggest any time the better one appears, or to join with others even in a system of lesser merit which may command the support of other earnest disinterested friends of cooperation.

MR. SCHRIVER: I move the adoption of this report, and I also move in that connection the thanks of this society to Mr. Dillon for this very clear and comprehensive paper. It involves evidently a great deal of travel, a great deal of research, much common sense and a lot of hard work, and I trust that it will be published somewhere at an early date.

THE PRESIDENT: I am sure that represents the feeling of us all. The paper might bring out valuable discussion, but as we have the report of the Committee on Cooperation to be given, which I believe may take advantage of some of the ideas set forth,—the discussion may well be postponed until after that. We are now to listen to the report of our Committee on Cooperation, by the chairman, Ezra A. Tuttle, Esq., of Eastport, L. I.

REPORT OF COMMITTEE ON COOPERATION

EZRA A. TUTTLE

In preparing this report we thought it proper to review somewhat the work that has been done since our annual meeting last

January, and a considerable part of this report is devoted to a review of work, to clear up in our own minds and in the minds of others the subject of cooperation, and to try to find a practical way of putting some profitable plan of cooperation into effect.

Pursuant to a resolution unanimously adopted by this society at its annual meeting in January, 1912, the President sent out the following invitation:

A conference of delegates of producers' and consumers' organizations will be held in the rooms of the New York Board of Trade and Transportation, No. 203 Broadway, New York City, on Friday, April 19, 1912, at 2 o'clock in the afternoon, and on the following day, pursuant to the following resolution unanimously adopted by the New York State Agricultural Society at its annual meeting in the capitol at Albany, January 18, 1912:

WHEREAS, It is admitted that it is desirable that the country producer and the city consumer be brought into closer relation, and that it is desirable that cooperative methods be adopted to bring about such relation;

Be it Resolved, That the president of this society shall issue a call for a delegate meeting, to be held in the near future at such time and place as in his judgment seems best, for the purpose of working out a plan of action which shall meet with the approval of the organizations represented; that he shall invite the grange, fruit, vegetables and floral associations, cooperative associations and other societies interested as producers, and also consumers' clubs, labor unions and other interested organizations from the cities to send delegates to such conference.

You are earnestly requested to attend such conference as a delegate of your organization, or see that a properly authorized delegate attends. It is hoped that practical results of great value to the interests represented may come from this conference. No action will be taken that will bind your organization.

GEORGE W. SISSON, JR.,
President.

In response to this invitation the following organizations sent delegates to that conference:

New York State Agricultural Society
Growers' & Shippers' Exchange
Western New York Horticultural Society
New York State Vegetable Growers' Association
Long Island Cauliflower Association
Long Island Potato Exchange
Bermuda Green Vegetable Growers' Association
Mommouth County Farmers' Association.
Hudson River Fruit Exchange
State Grange, Patrons of Husbandry
Pomona Grange, Ulster County, N. Y.
Glenwood Cooperative Stores

Montclair Cooperative Stores
American Cooperative Stores
Housewives' League
Citizens' Food Committee
Cooperative League of New York
Flatbush Taxpayers' Association
Tribune Farmer
Farmers' Institute Bureau
Rural New Yorker
American Agriculturist
New York Central and Hudson River R. R. Farm Bureau
Agricultural Education Association of Southern New York
Long Island School of Agriculture
New York State College of Agriculture
Columbia University, Department of Agriculture
New York Association for Improving the Condition of the Poor
City Club of the City of New York.

In addition to the above organizations so represented by delegates, the following persons, among others, were in attendance at the conference: Honorable Raymond A. Pearson, William Church Osborn, Henry F. Atherton, William Connolly, Mrs. W. Y. Velie, Mrs. Gross.

The conference was organized by choosing Mr. George W. Sisson, Jr., the president of this society, as chairman; and Mr. Horace V. Bruce as secretary. The conference then proceeded to the discussion of the subject in hand and numerous speakers participated, all agreeing that some system should be devised whereby producers and consumers should be organized into co-operative societies for the purpose of securing more direct business relations between producers and consumers and to save the enormous cost and numerous profits of handling food stuffs in the City of New York under the present chaotic, wasteful, and un-businesslike conditions. A committee of ten was on motion appointed by the chair to consider and report on some general plan to promote the organization of cooperative societies and to lead to the establishment of cooperative producers' and consumers' markets. The following day, April 20, this committee reported the following resolutions, which were unanimously adopted:

Resolved, That the conference of delegates from producers' and consumers' organizations on the subject of cooperation, held in New York City on April 19-20, 1912, requests the Department of Agriculture of the State of New York to assist in organ-

izing cooperative societies among producers and shippers throughout the state by having competent organizers work with the Farmers' Institute Bureau and by making cooperation a prominent feature of institute work.

Resolved, That this conference, composed of delegates from producers' and consumers' organizations, agricultural newspapers and other organizations, recommends that the Mayor, Comptroller, Board of Estimate and Apportionment, Board of Aldermen and other city authorities be requested to establish adequate wholesale and retail markets to enable producers and consumers of food stuffs to come into direct relations with each other.

Resolved, That a standing committee of representatives from organizations of producers and consumers be appointed to further encourage cooperative action between consumer and producer to the end that a more direct relation than at present exists, be established between these two classes which complement and depend upon each other.

Pursuant to the last resolution, Mr. John J. Dillon, of the Rural New Yorker, was made chairman of the committee which was designated as the State Standing Committee on Cooperation and the chairman was given power to appoint on that committee representatives of producers' and consumers' organizations and other representative persons, to assist in carrying forward the work. This State Standing Committee on Cooperation, pursuant to call of chairman Dillon met for conference December 5, 1912, in the rooms of the New York Board of Trade and Transportation. A large and representative delegation assembled and discussed with much spirit the necessity for pushing forward a general system of marketing food stuffs direct from producers to consumers and presented most conclusive arguments against the present system of handling food stuffs in the City of New York. This conference adopted the following resolutions:

Resolved, That we oppose the establishment by the City of New York of the proposed large wholesale terminal markets in the ninth ward of New York in place of the old Gansevoort or West Washington Market (called both) at an expenditure of ten million dollars or more of city money, because such a market would perpetuate the present uneconomic and wasteful conditions for food distribution.

Resolved, That we favor the establishment of receiving terminals along the water front of the North River and East River for the Boroughs of Manhattan, Brooklyn and the Bronx; also the establishment of a sufficient number of retail markets for the handling of food stuffs in locations reasonably accessible to the population in the more crowded district of Greater New York.

That the boundary lines of these markets should coincide in such a way that the territory shall be fully supplied when such a chain of markets has been completely established:

That the City of New York should furnish the sites for such terminals and retail markets, but that the same should be operated by a cooperative operating company consisting of producers and consumers, making provision for the payment to the City of New York of a rental that shall be appropriate to the investment made by the city.

Resolved, That we here and now proceed to the organization of a cooperative corporation, under the laws of such state as may be determined by the committee, to consist of 100,000 shares at a par value of \$5 per share, with \$1 per share for surplus:

That the work of the organization be put into the hands of a committee of five consisting of chairman, John J. Dillon, Mrs. Julian Heath, William Church Osborn, Ezra A. Tuttle, George W. Sisson, Jr., Honorable Seth Low:

That this committee be authorized to perfect its charter and have it ready for filing at the meeting of the New York State Agricultural Society in the City of Albany on January 13, 14 and 15:

That the receipts of the stock subscription be paid into the hands of the treasurer of the corporation when organized, the treasurer to be placed under bond before receiving any money subscriptions:

That each stock holder shall be entitled to one vote irrespective of the number of shares that he holds, and the holding of any one individual is to be limited to 100 shares. Only the surplus is to be used for organization purposes and the capital stock shall be devoted to the business purposes of the organization exclusively:

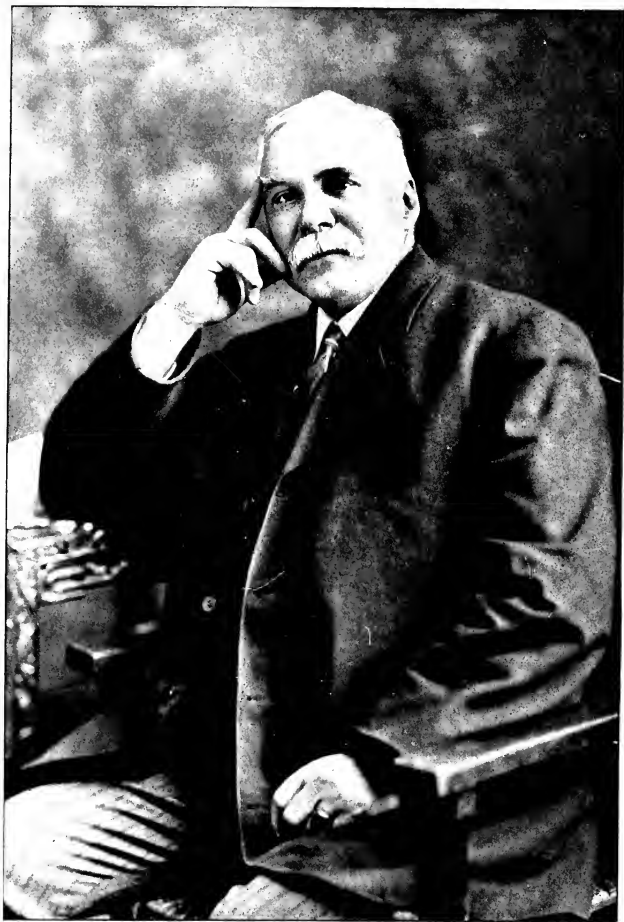


FIG. 32.—EZRA A. TUTTLE, CHAIRMAN OF COMMITTEE ON COOPERATION.

That the purpose of this company shall be to handle the produce of local cooperative producers' associations and of such individuals as may comply with the grading and shipping conditions established by the company or the state:

That out of the profits of the operation of the company no more than 6 per cent. dividends shall be declared on the stock and the balance shall be distributed in dividends to the cooperators in proportion to the business they do with the concern.

Resolved, That the State Standing Committee on Cooperation of the New York State Agricultural Society heartily approves and endorses the general principles and outline of the bill regulating commission merchants as presented for their consideration by Senator Franklin D. Roosevelt.

Resolved, That the chairman of this committee be instructed to present this bill to the State Agricultural Society with a recommendation that the society do all in its power to further its passage by the legislature:

Also that this committee requests that the matter be brought to the attention of every member of the state association with a request that the members write to their representatives in the legislature urging them to vote for the bill when introduced:

And be it further Resolved, That a subcommittee of this committee, consisting of the chairman and two other members to be appointed by him, be designated to confer with Senator Roosevelt in the preparation of the text of the bill.

Resolved, That this committee request the New York State Agricultural Society to secure, if possible, a liberal appropriation to further the work of cooperative movements, looking to the economic production and distribution of food products in the interests of the people of the entire state.

Resolved, That this committee recommends to the legislature of the state that a permanent food commission be created, with power, among other things, to establish markets in consuming centres and do all things possible to promote closer relations between producers and consumers.

The evils of the present situation of both producers and consumers are acute and appalling. The remedy must be radical, comprehensive and lasting. President-elect, Wilson, in an article

contributed recently to the *World's Work Magazine*, after reviewing the evils of our present system of industrial, commercial and economic organizations says:

"Society is looking itself over, in our day, from top to bottom; is making fresh and critical analysis of its very elements; is questioning its oldest practices as freely as its newest, scrutinizing every arrangement and motive of its life; and it stands ready to attempt nothing less than a radical reconstruction, which only frank and honest counsels and the forces of generous cooperation can hold back from becoming a revolution. We are in a temper to reconstruct economic society, as we were once in a temper to reconstruct political society, and political society may itself undergo a radical modification in the process. I doubt if any age was ever more conscious of its task or more unanimously desirous of radical and extended changes in its economic and political practices.

"We stand in the presence of a revolution — not a bloody revolution, America is not given to the spilling of blood — but a silent revolution whereby America will insist upon recovering in practice those ideals which she has always professed, upon securing a government devoted to the general interest and not to special interests."

Your committee submits the following propositions:

1. Organization of farmers and other food producers is a prime necessity.
2. There should be in the state a central cooperative organization to assist and advise in the organization and operation of local cooperative societies.
3. Local cooperative societies should be organized in every community selling produce or buying fertilizers, or other farm and household supplies. Such societies would do much to secure better and more uniform grading and packing, would be able to ship and receive in carload lots, would be able through the central organization to sell more direct to consumers or to find the best markets, and to purchase more direct from the sources of supplies.
4. Cooperative wholesale and retail markets should be established in the larger consuming and distributing centres of the

state to bring producers and consumers into direct business relations, and to eliminate the expensive, wasteful and unbusiness-like methods of marketing through middlemen.

5. Laws should be enacted favorable to the organization and operation of cooperative societies to secure a system of more liquid loans, and protect and conserve the interests of producers.

6. The state should give liberal financial aid to this society to enable it to make a statewide, vigorous and effective campaign, through the public press and with paid experts, to organize co-operative societies throughout the state.

7. We recommend that this society in cooperation with the Agricultural Department take action at once to secure the cooperation of the state departments and societies of all the seaboard states from Maine to Florida to bring about a system of cooperative marketing direct from producers to consumers.

8. We recommend that the state enact laws and adopt measures, as soon as practicable, to provide adequate and appropriate receiving terminals for food stuffs along the North and East Rivers in the Boroughs of Manhattan, Brooklyn and the Bronx with cold and general storage connected with railroad and steamboat transportation; and also to provide sufficient and appropriate sites and buildings for retail department food stores located so as to be reasonably accessible to the homes of consumers.

9. We recommend the organization of a wholesale and retail cooperative corporation with capital stock of \$5,000,000 more or less, to be subscribed and paid in by producers and consumers, which shall be the operating company, or mutual agency, to receive, sell and distribute food stuff of all kinds with dividends limited to 6 per cent. on its capital stock and the balance of profits distributed to the cooperators.

10. We recommend the establishment by law of a state food commission to perfect and carry out plans for cooperative markets in all the larger cities and towns of the state.

The state does, and should do, that which is for the general public welfare, and which cannot be done effectively by private capital and enterprise. The state provides schools for our education. Is feeding the people less important than educating them? The state builds canals, armories, homes for the indigent,

hospitals and asylums for the sick and unfortunate, it builds roads, dredges and improves rivers and harbors, conserves at large expense our forests, fish and game, inspects for the public protection, our livestock, nursery stock, factories, dairies, and tenements, encourages and promotes scientific agricultural education and practice, but thus far it has left producers and consumers to the mercy of an army of unnecessary and unproductive commission men, jobbers, wholesalers, truckmen, cold storage men, speculators, peddlers and retailers who reduce the profits of producers to the vanishing point, and exact from consumers the last farthing of tribute.

The evils of the present system of food distribution are too great and complex to be coped with by the unorganized public. The remedy can never be applied without the intervention of the state. The federal government and some of the states are doing something. Cooperative farm credits are being agitated, Wisconsin, Minnesota and Massachusetts have enacted special laws to encourage and assist cooperation, but New York, where the evils are greatest and the remedy is most needed, lags behind.

We urge this society through its legislative committee to secure an appropriation of at least \$20,000 to assist in organizing cooperative societies for the proper handling, sale and distribution of food stuffs.

THE PRESIDENT: I think everyone will realize that we have listened to something of great importance. It may have impressed some of you differently than others and I am sure it is a topic and a paper to which we can give some thought and discussion. We have a few minutes before closing time and there will be some opportunity also this afternoon, for I learn that Mrs. Heath will not be here on account of illness.

Motion made that the report of the committee be accepted.

MR. WHITE: I do not want to discuss the subject just now, but I believe there are men in the room who will take issue with some of the suggestions. I know there are a great many people who are interested in cooperation and realize the fact that there is something wrong, but who have not gone far enough into the subject to really realize how deep the difficulty lies, and why it is neces-

sary to take steps which seem of such tremendous magnitude in order to reach it. Now is the time to discuss the question. I should like to hear the objections. Let us thresh this question out. Perhaps information can be given as to exact conditions, if members will raise objections to the report of the committee. I must say that while I have studied the question of cooperation and looked at it as a question that we might solve in country districts, when I came to go deeper into the question and learn the conditions as to the consumer, I came to the conclusion that I had never dreamed of so large a proposition. It is not a question we can take up by local organization and ever arrive at any definite result.

MR. SCHRIVER: Conditions are such that something must be done to bring about this cooperation. Let me give an illustration to show the necessity for action. In our place we use a great deal of feed and there are three feed establishments in the place. One of them is the grange; the others are retail dealers. Our grange store does a business of from \$125,000 to \$150,000 a year. Perhaps the other places do a business nearly equal to it. But there is this difficulty in our grange business. We cannot buy feeds from the agent that sells to the retail dealer. The retail dealers have an organization; they held a meeting last week in Middletown, in which they refused to buy feeds from the mills or firms that sold to the grange. Last summer our grange agent bought a carload of cement from an agent and it was duly and properly delivered. He had been in the habit of supplying the local dealers in different places in the county with cement. He went over to Florida and approached the man who dealt in the business there and he said: "You sold a carload of cement to the grange in Chester, did you not?" "Yes." "Well, there is the door; you can go out of it and you need never come here again." He told me that he lost the sale of 32 carloads of cement because he sold a carload to the grange people.

That is pretty ugly business, and you have to treat it in a rather vigorous and ugly manner. We have to do something. Who are the people that use the feed, pay for it? Has it come to pass that the people who consume the feed can have nothing to do with the sale of it? Is it so that the mills and the wholesale dealers can rule against the people who consume the feed? Is that honest,

straight business? And if it is not, we are entitled to have a vigorous and loud voice, and strong demonstrative purpose against it. So, notwithstanding Brother Tuttle's strong thinking and warm speaking, I am prepared to endorse it, because there is nothing else in sight that is feasible to endorse, and it is clear to me that we must do something. Possibly we might make a few mistakes while we are starting, and in the development; but it would be infinitely better to make a few mistakes than never to do anything; I have discovered that the men who never make mistakes never make anything else. Therefore, I am in favor of endorsement of Mr. Tuttle's report, because it opens the door to the doing of something.

THE PRESIDENT: There are people here whom we are trying to benefit who have not yet allied themselves with this organization, and the door of approach is open wide. There is someone out in the lobby who will take your name and take your little fee and enroll you as a member of the New York State Agricultural Society. We believe that everyone who attends these meetings and who is at all interested in agriculture in this state should ally themselves with this organization either by life membership, which is \$10, and no further dues, or \$1.00 for annual membership. We also have here some copies of the report of 1912, in which you will find most valuable papers and addresses of last year. We expect there will be a similar report of this year's proceedings printed a little later, so we save the results of these conferences for future consideration.

AFTERNOON SESSION

THE PRESIDENT: The matter under discussion at the time of adjournment this morning was the report of the Committee on Cooperation as given by Mr. Tuttle. Motion to adopt the report had been seconded. We have a few moments which might be devoted to further discussion.

MR. ATWATER: Mr. Tuttle has presented some aspects of the questions of cooperation; one of the most important of which is the problem of transportation. I think Mr. Tuttle has some

opinions of the parcel post which it might be well for him to amplify for us.

MR. TUTTLE: Parcel post is not helping the producers at all. For instance, suppose you want to send a head of cauliflower to New York City. It would cost about 24 cents postage to send the head, and if you want 10 cents profit, that would be 34 cents. For a dozen eggs I get 42 cents to-day. If I want to put up one case of eggs the postage on it would be 12 cents, and that would be 54 cents. They can buy them cheaper. You cannot use parcel post effectively as it now stands.

MR. COWLES: I should like to say a word on that subject. The trouble with parcel post is that it is not intended to serve the public. If any of you have read Mr. Bourne's argument in favor of it you would have heard him say it was entirely satisfactory to the railroads and to the express companies. I happen to know something about this thing because they call me the father of parcel post. Two years ago Congressman Sulzer of this state introduced a bill in Congress, at my request, to give us a parcel post in this country equal to that which had been given to other countries. At that time an Englishman, German or Italian could send 11-pound packages of their merchandise at eight cents a pound. I knew from the character of the committees I could not get anything better. So Mr. Sulzer introduced a bill giving us eleven cents a pound. I had some discussion with the chairman of the committee and he said to me: "If you are going to have eleven pounds, why not have fifty or two hundred pounds? The post office is our mutual express company, the greatest cooperative association that ever came into existence. It is yours and mine; ours to employ, ours to extend, and up to its limits it gives absolute equality of transportation rates and transportation privileges to every person and every place within its jurisdiction. And the reason why we have such a humbug parcel post is, because the railroads and express companies realized that something had to be done. They arranged this thing to make it just as ugly as possible, so as to put off the time when a bill should be passed such as we have to-day. There are two bills before Congress to-day. One of them is a bill which was previously introduced in 1897 and it provided for a parcel post such as you would like to have, with all

mail matter in one class and at rates — five cents a hundred — the very lowest rate charged by the railroads in their shortest contract, making the service on the principle of the modern post office established in this country in 1863 by Abraham Lincoln, when he bound all this nation together with one great transportation service with uniform rates everywhere up to its limit. We established a parcel post at 8 cents a pound. Later there was an increase of 100 per cent., to 16 cents a pound. The other is the bill introduced in 1911 providing for a parcel post limited by the capacity of a freight car and the size of a freight car, and at rates such as I have suggested,—five cents on a hundred pounds anywhere within this country.

VOICES: What is the remedy?

MR. COWLES: The remedy is this, to extend the postoffice over the entire business of public transportation and transmission, and I want to read one resolution. Your present governor on the third day of December, the first time he had an opportunity to act, introduced a bill that should make the very lowest rate a uniform standard rate for all distances. The resolution is: "*Resolved*, That the representatives and senators of this state, in the United States Congress, are hereby respectfully requested to do all in their power to secure the quick enactment into law of the flat-rate postal bill H. R. 26662 introduced in Congress December 3, 1912, by Honorable William Sulzer of New York, or have a more radical measure substituted for the costly, complicated parcel post law which went into effect January 13, 1913."

THE PRESIDENT: The resolution will be referred to the committee on resolutions. The discussion is upon the adoption of the report of the committee on cooperation.

MR. SESSIONS: I just want to call attention to what seems to me a good nucleus already for cooperative work and cooperative movement. We shall soon have established in New York at least twenty farm bureaus. It seems to me as though each one of these county bureaus in time will be able to work for cooperative associations in their respective counties. I know in our county we are working along these lines. I have had the matter up with Mr. Spillman and with Mr. Dillingham of Washington. As soon as more counties have secured the farm bureaus they will have frequent

meetings and devise ways and means for cooperative work. I think you already have established a nucleus for your cooperative organization.

THE PRESIDENT: We are glad to have this suggestion, which I believe is a valuable one.

MR. FULLERTON: What is the farm bureau and who runs it?

MR. SESSIONS: The farm bureau is established by the United States Department of Agriculture together with the College of Agriculture at Cornell and the State Department of Agriculture at Albany, with additional funds from the board of supervisors of the county. The county adviser is appointed by the department at Washington and is just the same as a doctor for physical ills. He is a doctor for farm ills, agricultural ills.

MR. SCHRIVER: I noticed in the report of the chairman last night that while he was enumerating the counties that had adopted this measure he did not count Orange County. Last week the board of supervisors voted to appropriate \$1,200 and establish a farm bureau in Orange County. We propose to be on the firing line.

MR. PALEN: I want to say for the information of those who want to know about the farm bureaus that there is an article in the sample number of the Tribune Farmer which you will find in the corridor, that will answer a great many questions on that. Chautauqua County probably has accomplished most along this line.

MR. FULLERTON: I asked that question to see how it worked with our state institutions. As a farmer I find that we have too many agricultural departments in New York State at the present time. I shall not say which, because I do not know. We work now through Ithaca, Geneva and Albany. Perhaps some of you think it is a fad of mine, but I believe there should be one head somewhere, naturally the Commissioner of Agriculture. Will the farm bureau work with Ithaca, with Geneva or with the Commissioner of Agriculture, or will it be another agency? As I get the answer to my question, it means five for New York State instead of three — and three is too many. I am not against the farm bureaus — the more the merrier! I do not believe agriculture can have too much help. I believe parcel post has helped.

I believe it will be the greatest help this country has ever known, because you can ship five pounds; and when the people find they can ship five pounds they will ask for five hundred, and when they ask they will get it.

MR. WADSWORTH: Is this matter of farm bureaus contained in the report we are about to adopt?

THE PRESIDENT: No; it is not.

MR. WADSWORTH: I might say that the subject is treated in the report of the committee on the development of agricultural resources.

On motion the report of the committee on cooperation was adopted.

THE PRESIDENT: I now desire to present to you, as our presiding officer this afternoon, our vice-president, Mr. Gilbert M. Tucker, whose activities as editor of the Country Gentleman have brought him close to us all. We are very glad to have him here this afternoon to preside.

MR. TUCKER: The subject to be taken up is agricultural education. When the State Agricultural Society was resuscitated three years ago — and it is only fair to say that its resuscitation is due wholly to the initiative of one single man, Professor, now President Raymond A. Pearson, then Commissioner of Agriculture — when he resuscitated the society there was a unanimous consensus of opinion that the one subject to which we ought to devote the first convention was the subject of agricultural education. There was at that time, still is, a very wide difference of opinion and much need of facts as to what is the function of the secondary schools. Should they be arranged to give as much of an education as possible in the time to the boys who never expect to study any more about agriculture; or should they be regarded as preparatory to Cornell College, simply taking up introductory branches so that the students who enter Cornell may be better prepared and begin at once their education in the higher branches; or should they teach special things according to the agriculture practiced in the community where they are situated? Do we need more of them? There are a lot of these questions. Some of them are still in the air. On some of them we have reached, I think, some conclusions.

I hope and believe that the report, discussion and paper this afternoon may clear the ground a little more, may bring together inharmonious opinions and especially may enlighten those who, like myself, feel that on many of the great questions at issue they are still in doubt. The report of the Committee on Education will be read by Dr. Finegan of Albany, Third Assistant Commissioner of Education.

DR. FINEGAN: The real chairman of this committee was Mr. Pearson, and owing to his absence I have been requested to submit the report. I should say that we have not had a meeting of the full committee and the report which is submitted simply presents the views of Mr. Tucker and myself, who are members of the committee.

REPORT OF COMMITTEE ON AGRICULTURAL EDUCATION

DR. THOMAS E. FINEGAN

Chapter 785 of the Laws of 1911 created an advisory board in relation to the promotion and direction of agricultural education and the advancement of country life. Under this act such board consists of the Commissioner of Education, Commissioner of Agriculture, Director of the New York State College of Agriculture, Director of the New York State Agricultural Experiment Station, Director of the New York State Veterinary College, Director or Dean of the state schools of agriculture at Alfred University, at St. Lawrence University and at Morrisville, a member of the State Fair Commission to be designated by that commission and three other members to be appointed by and to hold office during the pleasure of the Governor.

This commission has held several meetings since its organization and has recently agreed upon a declaration of principles which such board recommends be adopted as the policy of the state in relation to agricultural education and rural life problems. Your committee has carefully examined the recommendations made by the state advisory board and concurs in the main with such recommendations. Your committee further believes that the action of this association upon agricultural education may be made more effective by uniting with the state advisory board upon its chief recommendations.

Your committee on agricultural education, therefore, instead of submitting a plan of its own, lays before the society for consideration the report of the state advisory board, believing that such report, while possibly not beyond criticism in every detail, is on the whole well considered and judicious.

The report adopted by the state advisory board is as follows:

1. That the main effort toward the introduction of agricultural education, whether through state or local aid, be directed toward the study of agricultural and rural subjects in the public high schools.

2. That in addition to those institutions already authorized to train teachers of agriculture, special and adequate provision be made for training such teachers at the State Normal College and in one or more normal schools.

3. That the State Department of Education give direction at a few points distributed with reference to the leading agricultural industries, to the development of adequate teaching equipments in high schools which may serve as examples and illustrations for the further extension of such equipment.

4. That the special state schools already established, be developed toward teaching home economics and agricultural technology, the latter somewhat specialized for each school.

5. That the further development of the special state schools, when this may safely and wisely be accomplished, shall be made with reference chiefly to the fruit and vegetable growing interests, under which policy the southeastern and western parts of the state would be considered by the establishment of one school in each of those sections; and thereafter special schools of agriculture shall be established only if the people of a locality determine whether they desire a school and will take a substantial part in its financial support.

6. That this board favors legislation enabling cities of the first and second class to establish public schools of agriculture either within or without the limits of said cities.

7. That in schools of agriculture hereafter established, the Commissioner of Education, the Commissioner of Agriculture, and the Director of the State College of Agriculture at Cornell University, shall be ex-officio members of the boards of trustees.



FIG. 33.—DR. THOMAS E. FINEGAN, CHAIRMAN OF COMMITTEE ON AGRICULTURAL EDUCATION.

That such national legislation as is contemplated by the so-called Page Bill and those similar to it is inadvisable on the following grounds:

1. It is coercive as to policy and method and is unduly stimulating as to rate of growth of vocational education. It violates the biological law governing the sound and efficient development of educational and social agencies.

2. It proposes an educational scheme on an immense scale, for which there is little experimental support.

3. It is not adjustable to the educational policy and administrative machinery already established in many states, including New York.

4. It opens the way for bureaucratic regulations on the part of the federal government that might limit the autonomy of the states in the administration of their educational affairs.

5. This bill is in opposition to the sound policy of fostering the agriculture and country life of a state through the activity of state agencies which shall have their source in local initiative and support.

6. The agricultural extension bill, providing for extension work in agriculture by the College of Agriculture, is practically free from the objections that hold against the other measures herein mentioned that are now before congress, in that it is in harmony with the acts of 1862 and supplementary acts granting federal aid to state agencies.

Therefore be it

Resolved, That if the policy is adopted of returning to a state for specific purposes a portion of the income that the federal government derives from the indirect taxation of the citizens of that state, the state should have the same liberty in the application of these funds to the purposes named that it has in the use of any other portion of its income.

That the policy of the further introduction of instruction in agriculture into the public schools; and that to better accomplish this result, plans should be perfected as rapidly as possible for maintaining agricultural instruction with larger allotments; and that an allotment be provided each school, union or high school, teaching a class of not less than fifteen in agriculture, and for the

common district school giving an approved course in nature study."

MR. TUCKER: As this report embodies resolutions, it is referred to the resolutions committee, who will report to the meeting of the society as distinguished from this general convention meeting. The subject will be amplified by Mr. Arthur D. Dean, Chief, Division of Vocational Schools, State Department of Education, who will address us on Progress in Agricultural Education in New York State.

PROGRESS IN AGRICULTURAL EDUCATION IN NEW YORK STATE

ARTHUR D. DEAN

For one hundred fifty years agriculture has been regarded as a proper subject for school study and a quarter of a century has passed since the first successful high school of agriculture was opened in this country. But we are still talking about introducing agricultural teaching. However, we have learned some things relative to its workings.

There are certain points common to the most successful systems, among which are:

1. The schools are so located that pupils may receive instruction from specially trained teachers and live at home where they may help their parents with the daily chores.
2. The conditions for the establishment of the schools are such that local investment is necessary in order to secure state aid.
3. The administration is centralized and expert assistance given.

That the principles underlying the above conditions are of importance in the organization of the individual school is shown by the fact that the activities of many successful schools are based upon one or more of these principles.

In the State of New York there are in successful operation twenty-seven schools of agriculture, mechanic arts and home-making organized in accordance with and maintained under the provisions of Article 22 of the Education Law. Eleven of these schools are taking up this work for the first time this fall. The remaining sixteen are fortified with the experiences of a year. At present there are 1,704 boys and girls studying agriculture in the twenty-seven vocational courses in agriculture in our high

schools. Two hundred and sixty-eight other pupils are studying the subject in other high schools not being vocational agricultural departments.

The local school with its agricultural course must connect itself with the home and the community. The best school of agriculture is closely identified with the community and its affairs. The degree of success seems to depend in a large part upon how much the school gets from the community and how much it gives in return. Such a school stands for progress and efficiency and through its officers and teachers takes the initiative in movements toward community welfare. Each farm, home, organization and society seems to be rich in opportunity for the school seeking it. Each boy and girl comes to school with an almost inexhaustible store of experience. The wise teacher takes advantage of such conditions. He connects his school with as many of the neighborhood centres as possible; he leads his pupils to interpret their experiences in the light of biological and physical laws; he encourages the development of the sense of social interdependence. This procedure does not always result in a temporary knowledge of the number of swimmeretts on a crayfish, or the laws of falling bodies in terms of $S = \frac{1}{2} gt^2$, but it does formulate a groundwork of science in terms of experience. This fundamental science is necessary as a basis for later instruction along the special lines of agriculture and homemaking. It is evident that local and individual work of this kind cannot be outlined in a general syllabus, nor can its results be tested by a uniform examination. On the other hand, experience has shown that some standard is necessary. In view of these facts, the Education Department encourages the development of local activities and local syllabuses under the close direction and supervision of the Division of Vocational Schools.

It is necessary for these schools to have definite assignments of home project work so that the pupils will know about the business of farming from another standpoint than mere book learning. These local schools are for farms boys. The art of farming is learned at home and the science of farming is learned at school. The art and the science should not be divorced; hence provision should be made for "home project" work carried on at home under the direction of the teacher of agriculture. One of the best of these

home projects is being carried on by a boy fifteen years old. He studied poultry husbandry last year and chose for his problem to determine the cost and net income of a small flock of hens for one year. He set seventy-five white leghorn eggs under five hens, May 1, 1912. The following were some of the articles constructed by this boy from plans and specifications drawn by him — coops and yards for young chickens, feed hoppers, roosts, nests, water fountain, house and yard for winter. A suitable system of book-keeping was devised and account is kept of all income and expenditures, including estimates not purchased. The young roosters are sold for broilers and the pullets kept through the winter. Each pullet is numbered and is to be trap nested for eggs. A weekly report is made to the teacher of agriculture and the whole project is to be summed up by the boy in a thesis to be written next spring.

These schools must reach out and aid those who cannot attend them for full time. The Division of Vocational Schools has pointed out the necessity of and opportunity for the establishment of a system of continuation schools which would provide for the boys and girls who are employed at least part of the time. The schools of agriculture are already, in many places, filling this need. A large number (mostly boys) of those enrolled in the work in agriculture attend from three to six months of the year. Some of these study only the vocational subjects; others enter the full curriculum. Even more effort should be made to meet the needs of these pupils. They are usually after education rather than counts or diplomas. I offer an illustration of this work taken from school announcement of the Belmont High School.

SHORT COURSE IN AGRICULTURE OFFERED THIS WINTER TO THE
BOYS OF THIS REGION

Realizing that many boys are unable to attend school because of their needed services on the farm in the fall and spring and feeling that this ought not necessarily to deprive them of all educational advantages, the Board of Education of Belmont High School offers a short course in agriculture this winter to all in this vicinity who may care to take advantage of this splendid opportunity of extending their education a little. Outside of the state agricultural schools it is believed that there is not such an oppor-

tunity open to the boys of any other county in the state, but it would seem that there should be a place for such a course.

In many ways this work will be unique in that it will not adhere to the traditional course of study in the regular schools, but will be adapted primarily and essentially to the needs of the boys who are desirous of learning something that will be of practical value, something that he can take home and put into actual use. There will be no unessentials taught, no visionary precepts, no unnecessary frills, but the work will be strictly practical every day, every minute.

Here is a chance for the boy to attend school winters and work the rest of the time as they did in the "good old times." The course will commence after Thanksgiving, December 2 and last until Easter. Another especially interesting feature is that it will take but four days each week, giving the boy Friday and Saturday for necessary work at home. In other words, the boy will attend school from Monday morning until Thursday night, continuously, and the work all that time will be agriculture or applied agricultural subjects.

The work proposed is as follows and if any boy does not think it will be worth his while, he must be hard to enthuse. Indeed it is the most fascinating and tempting short course of study that has ever been offered to a farmer's son.

The subjects offered in this course are a general course in agriculture, farm mechanics, dairy husbandry, farm bookkeeping, agricultural English and agricultural arithmetic. All of these subjects will be taught by the special instructor in agriculture, Professor T. M. Avery, a graduate of Winona College of Agriculture and Cornell summer school, and each subject will be complete in itself.

The course in general agriculture will be based on a general text book, and will be supplemented with plenty of field and laboratory work. It will cover the whole field of agriculture in a general way, especially touching on treatment of soils, fertilizers, cereal and forage crops, and animal husbandry.

The course in farm mechanics will be work in the finely equipped carpenters' shop where simple farm appliances will be made, use and care of farm tools and machinery taught, and some work in forging and welding will be given.

The course in dairy husbandry will be the care and handling of milk, judging cattle, making butter and cheese and other matters connected with modern dairying. Three different separators have been loaned to the schools by the companies making them and thus the pupil is taught the use and care of the standard makes.

In farm bookkeeping, the pupil will be given a course in the keeping of all kinds of farm accounts, breeding, milk, stock and feed records, making out of bills, inventories, estimates, averages, the principles of banking, credits, money accounts, etc.

The agricultural English will be something out of the ordinary in English work. The student will be taught how to write business letters, study government bulletins, farm journals, read the weather reports, crop reports, will be given special subjects to read up on and write about, such as dry farming, commercial vs. home-mixed fertilizers, etc. In fact all the work will be from the standpoint of the farmer's life and environment.

The work in arithmetic will be along the same line of farm problems, computing of balanced rations, contents of silos, bins and hay stacks, computing of simple farm accounts, interest problems as they affect the every day transactions of the farmer, cost of building barns, sheds, etc.

This in brief is an outline of the work proposed and no boy can take this course for the twelve weeks it will cover without being greatly helped and at the same time he can feel that he has done all in his power to become a better and more successful farmer.

There will of necessity be a small tuition for this course of \$5.00 which will cover all laboratory and shop fees with the exception of breakage. Any further information may be obtained from either Professor Avery or Principal Sumner. Let us have a good class this winter. All aboard for the short winter course.

These schools must do something for the general community interest in the form of lectures. Every farming community has a wealth of equipment desirable for a school of agriculture. Reports from schools now in operation indicate that the owners are almost without exception glad to assist the school in the use of this material. One teacher reports that men who are unwilling to cooperate are usually the ones without much worth. Several of

the schools have arranged a definite program of lectures and demonstrations by men either resident in the community or carrying on business there.

The following program arranged by the Hannibal School is a typical one:

Lectures 1912-13

Milton Terpening	Potato Growing
R. Cooper	Potato Growing
W. J. Bradt	Making New Meadows
Hubert Rogers	Dairy Testing
Rev. F. W. Dunning	Geology of Hannibal
Rev. B. A. Matzen	Cooperation
Ernest Lonis	Farm Management
Mrs E. W. Rice	Saving Strength
Raymond Cooper	When Cows Pay
Dr Lattin	Picking and Packing fruit

Field demonstration

F. E. Rogers (Oswego county food expert)	Grading Fruit
F. S. Welsh (N. Y. C. farm agent)	Drainage

Field demonstration

C. F. Bley (Tree expert)	Pruning Old Orchards
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Field demonstration

C. F. Bley	Shaping Young Fruit Trees
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Field demonstration

Raymond Cooper	A Sanitary Stable
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Field demonstration

G. W. Rogers	Scoring Pure Bred Cows
Hubert Rogers	Dairy Records; What Individual Cows Pay

Field demonstration

Mrs Jasper Hopper	The Farm Home
Clinton Tucker	The Cheese and Butter Industry

Field demonstration

C. S. Lockwood	The Farmer and the Community
C. W. Haws	The Cost of Growing Four Acres of Potatoes
M. H. Minar (Local druggists)	Chemistry of Soils

A boy from this school won first prize at the State Fair for box packing apples. The school has this year an exhibit at the Oswego County Fruit Growers' Association.

These schools must run for more than the usual school allotment of 160 days. If this most vital part of the work is to be

effective, these schools should be in operation during the summer. This does not necessarily mean that the activities need always be carried on within the building especially constructed for formal instruction any more than the building need always be used for formal instruction. At all times one or more of the teachers should be in the community. As many as possible of the pupils should be carrying on work all the time, in school, at home or elsewhere.

An example of what may be done in connecting the work of the school with the business of farming. During the past year the teacher of agriculture at Walton was employed for twelve months. A number of movements have been started which have created a wide community interest. One which met with special favor was the organization of corn and potato-growing contests. Twenty-five boys and girls of the town were enrolled in these contests. The members were visited during the summer by the teacher of agriculture. One public-spirited citizen contributed a suit of clothes as first prize in the corn-growing contest and another contributed a phonograph as first prize in the potato-growing contest. These prizes were awarded at the Corn and Potato Congress held in October in the high school auditorium.

An experimental plot of between two and three acres was loaned to the school by the fair association. Part of this land has been set aside for school gardens for the lower grades. Suitable prizes, donated by local merchants, were awarded to the owners of the best gardens. The remainder of the land was used for plot tests with corn, potatoes and alfalfa. Cornell seed corn was planted and the results compared with those obtained from planting some native seed corn furnished by a local grower. The three plots of alfalfa attracted much attention during the week of the county fair. Local farmers are much interested in this work. Men in the community contributed the fertilizer, teams and implements necessary to carry on these experiments. The Fair Association also offered \$30 in prizes in a plowing contest held during the fair. A farmers' club is also in active operation and holds weekly meetings during the winter.

These schools must tie up with other agencies which are working toward common ends. There must not be duplication of effort. The state must not do it all.

It is well known that the thing most cherished is that which comes with conscious effort. People take pride in an institution which is an expression, in part at least, of their own work. With community equipment, community lecturers, and community assistance in the school, there is an opportunity for the correction of one of our great economic wastes. From the standpoint of economy, it is time that the various state and federal supported endeavors in the field of agriculture should organize for conservation and concentration of effort. In practically every separate line of activity the leaders have found: (1) Local and individual work is most effective; (2) at least one person who knows the community conditions and needs must act as agent; (3) this person should be especially trained in agricultural work; (4) community investment is desirable.

Farm bureaus, farm agents and specialists could best work through and in cooperation with a community school of agriculture. Whenever possible these schools should cooperate in and carry on this work. The teacher or teachers of agriculture might well be the local representatives of all agricultural activities of the community.

We must modify to some extent our present plan of providing special state aid to full four-year high schools. There are 213 academic schools in the state which do not maintain a full four-year academic course. These schools have from two to five teachers. Such should be induced to center the major part of the school activities around the work in agriculture. These schools should be cut loose from all tradition and allowed to develop as pure community schools. There is little doubt but that an experiment of this kind if started in a few localities would lead to a similar procedure in many districts in the state. Three teachers might well specialize in these schools, one to teach boys, one to teach girls and one to teach both boys and girls.

In conclusion. The school cannot be the best expression of the community unless provision is made for the girls as well as for the boys. Already six of the schools of agriculture have made definite provision by the employment of a teacher of domestic science. Present conditions indicate that the smaller schools will have two vocational teachers: a teacher of agriculture and a

teacher of homemaking. If the teacher of homemaking is also qualified to teach some of the special subjects of agriculture as fruit growing, poultry husbandry and dairying, there could be provision made for four years of vocational work for both boys and girls.

There seem to be no inherent reasons why women should not occupy positions of responsibility and trust in connection with almost every line of agriculture. There are numerous instances in which a farmer's success has depended more on the business ability, knowledge, energy and tact of his wife than on his own attainments. In certain specialties the opportunities for women in farming are as great as for men. It would seem preeminently fitting for women to become managers of poultry raising, bee-keeping and flower-growing establishments, and in but slightly less degree, of vegetable gardening and fruit-growing enterprises.

MR. TUCKER: It is deeply to be regretted that it is impossible to invite discussion or comments on this very interesting paper by reason of the engagements of the speaker who is next to follow. The topic is slightly different from these which we have been considering, but closely allied to them, and the speaker is a distinguished teacher of agriculture. We shall have the pleasure now of listening to an address on "Modern Business Methods Applied to Farming," by Dean H. E. Cook of the St. Lawrence School of Agriculture.

MODERN BUSINESS METHODS APPLIED TO AGRICULTURE

H. E. COOK

Much is said and written concerning the application of modern business methods to the farm and as a rule they fail when tried.

The situation has been particularly embarrassed by the fact that the finest type of business men, men who have mastered the science of the business world found themselves hopelessly involved when they touched the farm. To our wealthy men farming was synonymous with loss, and so however much was said about business methods and bookkeeping the farmer kept along in his own way, and pointed to as evidence of failure, these same methods applied on a neighboring farm.

As a result of cheap lands and an inability to apply city methods to the farm, the business of producing crops has generally become the work of the family for which no pay roll or salary sheet is made out. If anything remains over after the necessary cash living expenses are paid it is reckoned as profit. No salary is paid to the farmer and his family, if so, he would frequently find himself insolvent. Under this system the prudent have paid for farms and gained a comfortable living.

The heavy drain upon the country for its best blood to what seemed more attractive in the city has left many fathers and mothers alone at an age when they were no longer fitted to carry the burden of the farm. Hard work in early life had made the day of retirement to the local town look bright. And the renter took his place. Now the so-called tenant system is in the minds of men a symbol of a degenerated agriculture, and I must confess that it has as a rule been true.

The facts are that farm rental is no more degenerate in principle than the ownership of a building by one man and its occupancy by another; the tenant in some way having paid the owner of the building a fair value for its use. We have deplored tenantry and prayed for the day when prosperity would again come to the open country and the owner would become the occupant of the land.

I venture a prophecy that the millennium will never come and furthermore that tenantry may increase. Tenantry leaves a bad taste not because the thing itself is wrong but because it has developed through unfortunate causes. Something like this perhaps: The owner who had developed his farm himself and paid for it through certain methods all his own, could not endure the methods of another no matter how good, and being forced to leave the farm through sheer lack of strength he had a feeling of antagonism to the situation. The result was therefore one of competition instead of cooperation ending in a degenerate farm, a lack of interest in the church and school and a general dislocation of the community.

The system of tenantry is here because the farm as a business will not pay cash for the labor and leave a balance. The farm units are too small to pay for supervision and so the farmer must

be buyer and seller, bookkeeper and manager, and have a technical knowledge of his particular branch of farming. He is the whole thing and so he finds the so-called industrial life a hard competitor, while a well organized division of labor makes for better efficiency and a requirement for less hours of labor.

What shall we do? Here is a plan and ten principles upon which it is founded.

1. Employing skilled labor.
2. Thorough and immediate supervision.
3. Careful accounting of cost of production.
4. Making small per cent. profit on a large business.
5. Applying supervision to a maximum area.
6. Producing only the best and making a guarantee.
7. Always having something to sell.
8. Having in mind the interest of the buyer.
9. Getting as near to the consumer as consistent with present trade relations in farm products.
10. Buying everything at wholesale, paying cash and discounting bills.

To make a local application farms shall be located in Lewis, Jefferson, St. Lawrence and Franklin counties. Ten groups of 10 farms each ranging in size from 100 to 200 acres. To be located as convenient as possible to shipping points but not necessarily near large towns.

The location to be also governed by good roads, schools, varying types of soils; namely, sand, sand loam and soil of as much natural fertility as can be bought for a reasonable price. This plan of distribution would reduce to a minimum losses from unfavorable climatic conditions, and make possible the largest variation of cropping possible in the territory covered.

This plan would not disturb the present unit in the neighborhood and would use present buildings and equipment without any business or social dislocation.

These farms to be worked by tenants on a share basis on the same terms that farms are now rented, which would not disturb any deep-seated traditions, and probably no better plan could be devised at least for the present.

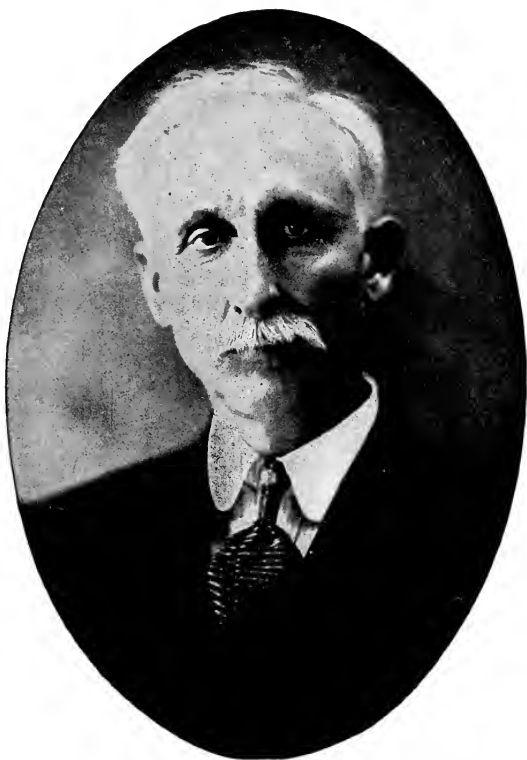


FIG. 34.— DEAN H. E. COOK, ST. LAWRENCE UNIVERSITY.

Over each group of farms will be a local superintendent to be paid one-half by the owners and one-half by the farmers who will have supervision of the work, raising the standard of quality, changing and improving methods and altogether making the group more profitable for owners and farmers.

Each group of farms will breed the same live stock and if deemed wise all of the groups could do likewise. In other words community breeding would at once become established. To illustrate: Upon each farm a pair of pure-bred Percheron mares would total a big breeding establishment of 200 and in each instance earning their daily feed. This plan is practically without limit along these lines.

Adaptability of tenants would largely control the extent of special development such as certified milk, trucking, pure-bred stock, etc.

The possibilities of wholesale purchase of all supplies for farm and home are limited only by the ability to organize for it in the central office.

Each group of farmers will elect a spokesman who will represent them at the central office when any adjustment is necessary, not satisfied by the local superintendent. This central office will be located if possible upon a central group of farms. It will be equipped with necessary stenographic outfit, bookkeeper and general manager.

Local managers will meet quarterly at the office of the general manager to discuss the business of improving methods and decreasing cost of production, the effort being to stimulate all to the efficiency of the best and to encourage the same improvement among the groups of farmers.

This plan of purchase does not take any single farm or group of farms out of the market. They can be bought and sold as formerly without disturbing in any way the integrity of the plan. Not changing the size of the original units or farms is also a part of the same advantage. One can imagine that such a corporation would find itself not only farming but doing a general real estate business.

To conclude: We have taken supervision and spread it out over sufficient business to make it profitable. We have almost entirely

eliminated cash labor, the sink hole in big farming. We have placed every person outside of the central office on the merit system. We have made wholesale purchase possible. We have sufficient production to enter the market as a merchant. We have not adopted a plan for which men cannot be found. We have made it possible to apply best-known methods of production. We make possible general land improvement. We have placed farm operations on a business basis and so have settled farm credits or farm banking. We have placed farm tenantry upon a profitable and honorable basis. In fact, we have brought scientific management to the farm as presently occupied. We cannot lose and we have every chance to win.

MR. FULLERTON: I want to ask Mr. Cook one question. Does he think that our descendants will stand for a thing that his ancestors and mine left Europe because of — tenantry? Never, as long as we are Americans, will tenantry come into this great and glorious country.

MR. COOK: The trouble is, it is here now. Come out into the country and see how many tenant farmers we have, real Americans, working farms on shares; and some of them, a great many of them, will be the land owners of the next generation. Some of the men who owns farms to-day, splendid types of American farm citizenship, were tenants before. We have tenantry and we are going to have it, and let us undertake to improve rather than to destroy, as we cannot get rid of it.

MR. TUCKER: The next order of business, which is not on the program, is the reading of the report of the Committee on Development of Agricultural Resources, by Mr. Edward van Alstyne, Director of Farmers' Institutes.

MR. VAN ALSTYNE: We have given some consideration to these questions, which are pretty far reaching, and we regret that lack of time and illness of our chairman prevented our presenting a report as full and perhaps as revolutionary as we had in mind. We have thought it wiser to present a very brief report on two or three fundamental questions.

REPORT OF COMMITTEE ON DEVELOPMENT OF AGRICULTURAL RESOURCES

EDWARD VAN ALSTYNE

Your committee regrets the absence, through illness, of their chairman, Honorable William Cary Sanger, which has necessitated a less complete report than we desire. The committee has spent considerable time in discussing various measures tending, in our opinion, to the betterment of agricultural conditions in the state. The matter in mind is so far-reaching that we have deemed it unwise to take up in detail the various subjects under consideration, and we would submit the following resolutions as the unanimous opinion of the committee.

Your committee is of the opinion that all measures for the improvement of agriculture, to be permanently effective, must be founded upon complete and accurate knowledge of conditions as they exist. To embark upon any extensive program of development without such knowledge is to invite serious waste of time, energy and money. We, therefore, urge that the state cause a survey of its agricultural resources to be made with care and deliberation to the end that information concerning every economic and social factor affecting the progress of agriculture may be gathered and made available as a basis for intelligent effort in the future.

Your committee has examined the provisions of Assembly bill No. 19 introduced by Mr. Cole, entitled "An Act making an appropriation for the organization and support of county farm bureaus in the various counties of the state." In so far as this bill aims to extend state aid to the county bureaus and to establish a degree of supervision and guidance over such bureaus under the commissioner of agriculture, your committee recommends its favorable consideration. It desires, however, to suggest that the bill should be more specific in those provisions which are intended to rest power of supervision in the department to the end that the work may be carried on without conflict of authority or the injection of local politics.

In this connection, your committee desires to call the attention of the society to the urgent need of more thorough coordination among the several governmental agencies now engaged in agricultural work.

CHAIRMAN TUCKER: Any remarks on this report will now be very welcome. There being none, the report will go to the committee on resolutions and by them be referred to the society.

HON. JAMES W. WADSWORTH — Ex-speaker of the Assembly: In moving the adoption of the report I should like to make a few comments on the second portion of that report in reference to the qualified approval of an amendment before the legislature appropriating \$25,000 to provide \$600 a year to any county bureau which through its county authorities contributes a like sum. This question of county bureaus and this first effort to extend state aid to them opens up a very wide field for discussion. I think the gentleman from Long Island, Mr. Fullerton, earlier in the proceedings commented upon the apparent increase of the number of government agencies which are seeking to take part in the extension of agriculture and in the effort to improve the conditions of agriculture in this state. If I am correctly informed a recent offer has been made by the federal government and is now being taken advantage of by some of the counties, by which the federal government is to appropriate or has already appropriated a certain sum to any county which shall establish an agricultural bureau and contribute a certain sum of money and appoint a director who shall act as it seems in an advisory capacity — although his functions would seem to be rather vague — to the people who live in that county, and who apparently is to be under a certain degree of supervision from the federal government. Far be it from me to contend against contributions from the federal government, in aid of agriculture in this or any other state; but I think it would be a wise thing for the society in a general way to pause a moment and consider whether we shall not take some notice of this tendency to scatter all our shot. A very interesting address has been made by a representative of the Department of Education here which shows that that department is doing excellent work in the support of agricultural education. It is doing it apparently on its own hook and doing it I have no doubt, efficiently. The Commissioner of Agriculture, whose first function is the enforcement of the agricultural law, also takes part in the support of agricultural education and does it, excepting when he is willing to cooperate with other agencies, on

his own hook. The College of Agriculture is supported entirely by the state and sends out its agents. I understand Dean Bailey is to ask for \$75,000. The Commissioner of Agriculture is going to ask \$25,000 for him to do the same kind of work. We have three secondary schools of agriculture which, so far as I am able to understand, are not closely related to any other governmental activity in the spread of agriculture in the state, although they are doing efficient work. Recently we have been receiving offers from railroads and Sears-Roebuck, the International Harvester Co., etc., to contribute money from their personal and private treasuries for the support of agriculture and apparently with no control or guidance from state authority. I think I am correct in saying that already five separate distinct agencies have been erected in this state to spread agricultural education for the development of agriculture. The motives of the different agencies are undoubtedly very worthy. The introduction of this bill indicates that the State of New York is going to help the farm bureaus at the same time the federal government and the boards of supervisors are appointing the directors. There is no easier way of wasting money, effort or time than to scatter our energies and to neglect coordination among the governmental agencies. This bill, which I understand is supported by the Commissioner of Agriculture, Mr. Huson, makes an attempt to establish a certain degree of supervision over farm bureaus which have been inaugurated by the federal government, to establish a certain degree of supervision over farm bureaus under the State Department of Agriculture. Your committee has recognized this situation, that the farm bureau movement is undoubtedly popular. It represents a substantial contribution from the federal treasury, and the story from Washington is that the contribution may be tripled this year. It would be impossible; it would be unwise, unjustifiable and unwarranted for this society, taking an interest as it does in agricultural matters, to attempt to refuse a contribution of money from the federal government. It would be unwise and unpatriotic for this society to attempt to say that the State of New York should not put in at least \$600 for a similar purpose. But I do think it is within the province of the society to call attention to the fact that such scattered administration is going to result in an avalanche

of charity and not a truly constructive system. Each one is good in its way; but sooner or later you will find conflicting elements among you and they will be working at cross purposes. It is for that reason that your committee has taken the liberty of commenting on the bill pending in the legislature before we know what disposition will be made of it and suggesting that something be inserted in the bill to give the Commissioner of Agriculture or some recognized authority some degree of supervision which can be enforced over the management of the farm bureau if the state is going to appropriate any money, no matter how small the sum.

I have heard a suggestion made that the time has come for a thorough organization of the agricultural activities, governmentally speaking, in the State of New York. I am one who believes the time has come and the need is exceedingly urgent. We are now standing on the brink — you should get together and have a little system. I do believe that a waste of the tax-payers' money is justifiable simply for the purpose of making it appear that we are trying to do something for the farmer. I think politics is pretty well eliminated now. We want it kept out. I have a certain sense of alarm, a certain degree of alarm as to impending conflict between local authorities such as a board of supervisors, the federal appointing authority who is to appoint these directors, who is situated a thousand miles away from Livingston County and has to take the word of the supervisors in Livingston County as to whom he shall appoint, and the conflict between those and the authorities in Albany. Politics inevitably will be injected into it unless we systematize it, because whenever you have a condition of confusion in the administration of public affairs there is the opportunity for political manipulation. And so your committee in its feeble way, and rather hastily, thought that this matter ought to be brought before you.

We have talked this matter over without coming to any definite conclusion, except that we recognize the need of coordination among these governmental agencies. We have no program to present. Such a program would have to be a most ambitious one. It would immediately raise difference of opinion as to the functions of the Commissioner of Agriculture, Cornell University, the secondary schools, the local farm bureaus, and the federal govern-

ment over which we have no control. I do think that the attention of the society should be brought to this matter of more perfect coordination in the future in the work which we all want to see done in the State of New York and every effort be made to prevent waste of time, money and energy and the injection of politics.

MR. FULLERTON: I want to suggest that for its manifold blessings the empire state should be duly grateful, and not the least among its privileges I should designate the talk we have just had from our neighbor who knows both ends of it. I have occasionally suggested the same thing in my barbaric western way and have been looked upon as an iconoclast. I do know this, if I want alfalfa analyzed I have to send some to Geneva and some to Ithaca. One gentleman kindly tells me that he cannot tell about the germination; that will have to be done by the other man; but he can tell me how many weed seeds there are. By sending to Washington I can get another analysis. I am willing to do that, because I have been brought up in an office. But I have heard from one of our educators that the average farmer will not even jot down his memorandum of profit or loss for the day; consequently will not write five letters. I should like to see this society the real head of agriculture in this state. I should like to see it take this matter up, and we should have one head — the Commissioner of Agriculture. It should not be any gentleman in St. Lawrence, Long Island or Ithaca, but at Albany. It should be one man and we should take it up, and if we take it up I should judge that we have the kind of an Abe Lincoln sort of a man that would help us. I am simply saying we have too many heads and there is no reason why a man should write to seven or eight places for information relative to his seed analyses or any other agricultural subject.

CHAIRMAN TUCKER: Any further discussion desired? If not, we pass to another topic. We had hoped to have the proceedings diversified by the notes of Mrs. Heath of the Housewives' League. She telegraphs the president that illness prevents her being at the meeting to-day. She has also telegraphed to Vice-President Tuttle a long message, which I shall ask him to read.

MR. TUTTLE: I regret very much for the society that Mrs. Heath is not here. She is the president of the National House-

wives' League. The organization has become very effective in Philadelphia, Chicago, New York, Providence, Boston and elsewhere. There is a large membership in the league. In New York City alone between one and two hundred thousand housewives are members of that league. I heard Mrs. Heath say last Sunday that this is not an organization, it is a movement. They do not claim to be a close organization at all. It is simply a movement that is popular and is trying to be effective in bringing about a saner method of purchasing supplies, and it comes under the purview really of the report of the committee on cooperation in the matter of more direct marketing from producers to consumers. I want to say further that this women's movement is going to do more to solve this question of the high cost of living and to bring about the direct marketing of our products from farm to the consumer than any other one thing that is happening to-day.

Mrs. Heath's telegram reads:

"I am completely overworked and fear I cannot be at the meeting to-morrow. If not, will you present my good will to the producers and all the agriculturists, and tell them how hard we are working to help adjust conditions. I am disappointed, but present my best wishes for a successful convention. Jennie Dewey Heath."

CHAIRMAN TUCKER: An important topic will be presented to our attention by Senator Roosevelt.

SENATOR ROOSEVELT: I have been asked to come here and say a word about the legislative end. I am glad to have heard what Ex-speaker Wadsworth said and I agree with him in every detail. I think he would, if he had gone a little further, have taken up the legislative end that he knows so well. We are confronted, as members of the senate and of the assembly, with very much the same troubles that you are finding in the larger work. We are confronted by chaos. We are confronted by different interests, different organizations, different sections, different individuals who come to us on the agricultural committee of either house or come to us as individuals, members of the legislature, and put their views before us individually and separately. Every year there are, as you all know, a number of bills relating to agriculture in-

treduced in both houses. We have too many laws now as a whole. We are getting more laws. The average farmer, when he wants a remedy, does not know where to go in those six volumes of consolidated laws plus three or four volumes of supplement. He has to consult legal opinion.

We shall have before us within the next year some pretty important legislation. We shall have a great many bills relating to the agricultural law, and we want to make it as simple as possible and we want to take it out of politics as much as we can. This morning the senate committee met and decided, with a view to making the procedure as simple as possible, to call, with the assistance of the assembly committee, a joint session of the two agricultural committees to discuss everything pending before us relating to agricultural matters. We have appointed the 28th and 29th of January for that joint session. The place will be announced later. I hope it will be held in the Senate Chamber if possible, or in this hall. At that meeting, which will begin immediately at the close of the legislature — probably about two o'clock in the afternoon — we shall have the definite program. We shall take up every bill which has come before us up to that time and we shall take up other questions which have not yet come before us but which we expect to have before us, for instance, farm credit. I doubt very much if the bill relating to that will have been introduced by that time. We have the commission merchant bill in shape for introduction within the next two or three days. We have already introduced the farm bureau bill. The cooperative bill for the simplification of associations getting together for cooperative purposes of buying and selling I understand is also to be introduced within a few days. All of these matters are coming before this meeting, which will last two days, if necessary three days. We want to bring people here and clear up the situation. We want to view these bills as a whole. There is no use in treating the agricultural law the way the forest, fish and game law was treated. You know what that meant. Everyone who had a creek in his county, or any birds, wanted a special law relating to that creek or to the season for a particular species of birds, and wanted it to apply to that county alone. We are almost on the brink of chaos from a legislative point of

view. The committee of the senate and the committee of the assembly want to cooperate with you all along these lines. We want to simplify it and we want your help, and I hope that this society and every other individual or society in this state who is interested will come at that time and give us the benefit of their views and their knowledge.

CHAIRMAN TUCKER: The last two speakers have certainly covered a topic, the necessity of unifying our activities, and I venture to commend the senator's request to every man here. Try to attend that meeting if possible, and express your opinion there.

THE PRESIDENT: With reference to the suggestion of Senator Roosevelt that members of this society attend that joint hearing, I think it would be perfectly in order perhaps at our business meeting to-morrow, that either a special committee or a legislative committee be empowered to attend that hearing with their advanced information as to the position of this society. I think that is one of the most important things coming out of the report of the committee on development of agricultural resources. We certainly desire the members of that committee to be in attendance at that hearing.

EVENING SESSION

Meeting called to order by Honorable Calvin J. Huson, Commissioner of Agriculture.

COMMISSIONER HUSON: I very much regret to be compelled to announce that Governor Sulzer has been unavoidably detained. We all appreciate that he is a very busy man and we hope that later in the evening and before this meeting adjourns, we shall have the honor of having him upon this platform and of listening to a brief address by him. The cause of his detention, however, is such that there may be some question whether he does arrive before the time of the closing of this meeting. He desires, however, that I assure you in his name that he is intensely interested in the purposes that bring this large and representative audience together, to consider those questions in which all good citizens are vitally interested. And I am further commissioned by him to assure you that whatever action is taken or recommendations made by this

great body known as the New York State Agricultural Society, will receive at his hands his most careful and respectful consideration.

Your President, Mr. Sisson, has an announcement to make.

THE PRESIDENT: I am sure that all of the members of the New York State Agricultural Society and everyone interested in any way in the upbuilding of agriculture in this state will be pleased to hear the telegram which I am about to read:

"AMES, IOWA, *January 14, 1913.*

GEORGE W. SISSON, JR., *President, New York State Agricultural Society, Albany, N. Y.:*

Greetings to you and all members of the New York State Agricultural Society. Best wishes that your meeting will add much to the constructive record of the society in the interest of farmers and better farming. Seventy years of service and yet greater opportunities are ahead.

RAYMOND A. PEARSON."

COMMISSIONER HUSON: Some weeks ago I had the pleasure of listening to Mr. Harvie Jordan, while attending a session of the Farmers' National Congress, at New Orleans. If his address this evening impresses you as it impressed me at that time I know you will all feel that his journey here from the South has not been in vain. It gives me great pleasure, I assure you, to present to you at this time Honorable Harvie Jordan, of Atlanta, Georgia, Chairman of the Agricultural Committee of Southern Commercial Congress.

COOPERATION AND RURAL FINANCE

HARVIE JORDAN

Mr. President and Members of the Society: I am deeply appreciative of the courtesy and cordiality of the invitation extended me by your Honorable President to address you on this occasion. I esteem it a valued distinction to be invited to a place on the program of so old and honorable an organization as the New York State Agricultural Society. You have invited a farmer from the empire state of the South to address the farmers of the empire state of the American Union.

The prime mission of your society is to advance and improve agriculture in all its varied departments, and to promote the general good and uplift of all the citizens and avocations of your great commonwealth.

That you have accomplished a splendid constructive work, the rapid development of all the arts and sciences as applied to improved and successful agriculture in this state, bears strong and foreeful testimony.

To be a factor in the improvement of the condition of rural life and a guide to the pathway of a higher and more progressive citizenship on the farm, constitute a motive and ambition which is second to none other in the efforts of mankind.

The independence, safety and prosperity of any nation depends upon the success of its agriculture. The United States is the wealthiest and greatest of all nations because of the immense wealth and diversity of its marvelous agricultural resources and possibilities. Strike down agriculture, and you remove the strong foundation upon which the progress of the nation is built. Strike down the farmer, the conservative force in our government, and you destroy the nation.

No great industry deserves the fostering care and cooperative support of the federal and state governments more than that of agriculture. No great industry has suffered more from the powerful, throttling influences of the trust and combined corporate powers, both commercial and financial, than that of agriculture.

Although agriculture represents the greatest and most valuable asset of the American Nation, and typifies the foundation structure upon which Americans progress in all the parts of accumulating wealth and general advancement in all departments of commercial, industrial and financial life, the farmers have been forced to occupy a secondary position in the enjoyment of the fruits from their own labors. The farmers in the United States have no standing in modern commerce or finance. They are not recognized in the business world as an active, vital and aggressive part of the business factors which guide and control the destinies of this great nation.

This condition cannot be charged to mental inability or an absence of business equipment among the farming classes in this

country, but is due, in my opinion, to a consistent perpetuation of individualism in farming operations which characterize the farming industry of the United States.

This is a day of cooperation and combination. That industry which does not cooperate for mutual protection and advancement of its interests, will become the stepping stone for the development of other interests which are more progressive and actuated by methods of twentieth century American ideals.

The continued perpetuation of the antiquated system of agricultural individualism in America, forces the farmers to till the soil, reap the harvests and deliver the products of their labor at the doors of commerce, receiving as compensation such prices or remuneration as the representative buying interests of the country may determine upon. With no rights or recognition in the markets, with only the privilege of tilling their soils and the cooperation of nature and providence, the great wealth of the fields and farms for the past half century, have gone to the enrichment and development principally of the large and small market centers of the country.

The city and urban population has progressed by leaps and bounds, at the expense of the rural population, and this condition will continue so long as individualism exists in our farming operations, and cooperative effort constitutes the methods of action in commercial life. In verification of this statement, I wish to say, that between 1900 and 1910, the urban population of the United States increased 35 per cent., while the rural population increased only 11 per cent.

There must be developed a system of sound, business cooperation among the varied agricultural interests in this country, if any satisfactory remedy to existing conditions is to be found and put into practical operation.

CONDITIONS IN NEW YORK STATE

There must be a cause for every effect. Let us look for a moment at the condition of affairs in this state in connection with agriculture.

You have a state the population of which totals closely to ten million inhabitants, eight million in your towns and cities, and two million in your rural sections.

Within the past decade, your urban population has increased 25 per cent., while your rural population has increased but 0.6 of 1 per cent., or practically nothing. There has evidently been set in motion in this state an exodus from the farm to town or village.

The situation is still more striking when we examine into the statistics of your farming lands for the past ten years. In 1900 you had 226,720 improved farms, while in 1910 this number had dropped to 215,597, or a decrease in ten years of 5 per cent. To be more specific, the improved farm lands in New York State in 1900 amounted to 15,600,000 acres, while in 1910 there were only 14,844,000 acres, a decrease in ten years of 756,000 acres in your improved farming area.

No state offers a more inviting field for the development of diversified agriculture under an intensive system of management, than the great State of New York. You have a consuming population of millions of people, and the finest system of railway and water transportation facilities in the world. There are millions of immigrants pouring through the gateway of Ellis Island, thousands of whom would be far happier and more contented if employed in the peaceful pursuits of agriculture in your great state, instead of striving against labor competition and the gaunt wolves of poverty and misery, which must be largely their portion in the great metropolis by the sea.

New England has less improved land in farms to-day than it had in 1850. The acreage of improved farming lands in the Middle Atlantic States, in which this state is located, reached its maximum in 1880, and has steadily declined since that date. It might be said in explanation of these conspicuous adverse conditions, that they are due to the movement of agriculture to the more attractive farming sections of the western states. This may, in a measure, account for the decline in your agricultural industry, but there must be local reasons, because clearly no section of the United States presents more inviting distributing market centers, and your lands are as fertile and as susceptible to large productions per acre, as any other in the nation.

What you need to overcome the difficulties which confront you is cooperative effort and the management of your farming operations in such a way as to secure fair and reasonable profits on the

labor and capital employed in your industry. The difficulties which confront the farmers in this state, are practically the same all over the United States.

The penalties annually exacted from American farmers, because of the absence of cooperative effort in the handling, financing and marketing of their farm products, amounts to hundreds of millions of dollars.

You need your cooperative societies for marketing direct to the retailers and consumers in this country, the same as have been so highly perfected in Denmark and other European agricultural countries.

RURAL CREDITS AND BANKING

The products of the American farmer, as a rule, are bought, but never sold. The most powerful obstacle to overcome in blazing the pathway to modern and economic methods of marketing, is the ruinous credit system which has so notoriously prevailed as a bulwark of destruction in all parts of the United States for the past 50 years.

The credit system as employed by American farmers is not only primitive and out of date, but it has persistently kept the producers of the agricultural wealth as much enslaved and as helpless in the proper distribution of their products as were the peasants during the decadence of the Roman Empire.

The economic solution of this vexed question lies in the cooperation of farmers along modern business lines, and the inauguration of a sane and sound system of cooperative credit and finance, which will enable American farmers to be the masters in the distribution of the products of their farms. It is done successfully in other countries, and I believe that American farmers have as much business training, sound and practical judgment and common sense as the farmers of European countries, who have so successfully solved the problems of production, finance and distribution. There is already commendable progress along these lines being made, in the successful establishment of cooperative stores and granaries in the western states, and in the organization of a system of cooperative cotton warehouses and cotton handling companies in the South.

Secretary James Wilson, in a recent report to congress, estimates the gross value of the agricultural products in the United

States for 1912 at \$9,500,000,000, a figure so tremendous as almost to stagger human conception.

President William H. Taft, in a circular letter to the various governors of the states on October 11, 1912, on the subject of agricultural credits, makes the following impressive statement:

“The twelve millions of farmers of the United States add each year to the national wealth \$8,400,000,000. They are doing this on a borrowed capital of \$6,040,000,000. On this sum they pay annually, interest charges of \$510,000,000. Counting commissions and renewal charges, the interest rate paid by farmers of this country is averaged at $8\frac{1}{2}$ per cent., as compared to a rate of $4\frac{1}{2}$ to $3\frac{1}{2}$ per cent. paid by the farmer, for instance, of France or Germany.”

In other words, the farmers of the United States are paying a penalty annually of \$270,000,000 in interest more than our foreign neighbors on the same amount of borrowed money, for the privilege of doing business with banks capitalized and operated in this country under existing national banking laws, rules and regulations.

It is also a well established fact, that merchants, manufacturers and transportation companies pay an interest charge in this country on their borrowed capital, not exceeding 5 to 6 per cent. per annum, and yet it cannot be denied that the collateral security offered by the farmers is much safer than the securities offered the banks from the various industrial corporations.

Why do those peculiar conditions exist? It must be due to the fact that farmers lack the financial machinery to place their securities before investors or bankers in an attractive and quickly negotiable form.

American farmers, representing, as they do, the real wealth producers, have no well defined systems of rural finance. They are subjected to the whims and fancies of our banking institutions, and forced to pay whatever interest rate is charged, without the power of resistance.

DYNAMIC AND STATIC MONEY

In discussing the subject of rural finances I wish to make myself clear. There are two forms of money in this country, one

we will call dynamic, or active dollars, and the other, static, or dead dollars. Money in a dynamic form is ready money, and in a position to multiply itself; whereas static money is mobile, or practically unemployed.

Money to be employed to advantage must find a constant, dynamic use. With the ordinary commercial account, every dollar is placed on the active line of engagement, and dollars not so engaged can be immediately returned to the bank and ceases to pay interest for the time it is not wanted.

A farm mortgage, on the other hand, gives a fixed amount for a fixed period, and this is contrary to commercial usage which permits the free engagement of every dollar in current business. Additional farm loans mean additional mortgages, and if a commercial house were compelled to do business as farmers in this country are forced to do, it would soon wind up in bankruptcy.

While commerce has all the active or dynamic dollars at its command, our great agricultural interests have but little, if any kind of money at its command, and that little is mostly static or dead money which is capable of being turned over but once a year.

The ruinous supply credit system on the one hand, and the domination of the buying interests over the farmers' products on the other, has made it practically impossible for the average producer to succeed beyond the ability to barely eke out an existence for himself and family, securing only the actual necessities of life, without luxuries in their homes, or the power to properly clothe and educate their children. This condition cannot and must not continue. The whole future of our great republic depends upon the building up of a happy, satisfied, thrifty and progressive system of rural life.

THE EUROPEAN BANKING SYSTEMS

You ask me, therefore, to explain how it is proposed to obtain for the farmers of America the benefit of dynamic money, and sufficient active capital upon which to operate their business, and free themselves from the thralldom of the commercial forces which have bound under a yoke the agricultural industry of this country. It is believed that this can be successfully done by adopting the methods employed by European farmers through their systems of

rural credit banks. These systems are three in number, namely: The Raiffeison, Schultze-Delitzsch and Landschaften.

The Raiffeison system of banks in Germany are small banks, organized by small farmers in local communities, and the business done is on loans granted upon the plan of unlimited liability, that is to say, each loan to each individual member is guaranteed by endorsement of all the members constituting the shareholders of the bank. This system of banks in Germany last year did a business exceeding one billion five hundred million dollars, without losses, and an interest charge not exceeding 4 per cent.

These small banks are not operated primarily for the purpose of making big dividends or paying large salaries, but for the purpose of maintaining a medium for financing the membership of the institutions with ready capital when needed in the conduct of their farming operations.

The Schultze-Delitzsch system of banks is known as the popular urban banks, and is operated somewhat after the fashion of our present country banks, only the stockholders are much more numerous, and the rate of interest does not exceed 4 per cent. per annum.

The Landschaften system of banks is under the direct control and operation of the landowners of the various provinces where they do business.

These are the strongest and most powerful rural banks in the whole of Europe, and under this plan the system of doing business is substantially the same as that of the American Merger or Trust Corporation.

A group of landowners in a county will organize into a league or corporation. They merge their lands into a negotiable bond, each unit in the bond representing the amount of land owned by each individual member of the league. This bond is rendered by law liquid and negotiable, by reason of its being ample security and perfectly safe for a loan of from 50 to 75 per cent. of the fairly assessed value of the lands incorporated in the bond. These bonds run for 20, 30 and 40 years, and find ready sale in the great money markets of Europe at from 3 to 4 per cent. per annum. They are considered as safe as government bonds and are as eagerly sought by investors.



FIG. 35.—HONORABLE HARVIE JORDAN, OF ATLANTA, GEORGIA.

There are billions of dollars of these land bonds in circulation in Europe, and wherever the farmers have issued them for the purpose of capitalizing their banks, money has been both cheap and plentiful, and agriculture very much more prosperous.

A land bond for one million dollars will readily secure five hundred thousand dollars in cash, and with this capital a farmers' bank is created in the county or province where the members of the league reside. Under this system farmers' national banks could be created in this country the same as ordinary national banks. These land bonds could be deposited with the federal government as security against the issuance of national bank notes and present a higher and more gilt edge collateral than the usual securities deposited with the government for the issuance of national bank notes.

Loans in these various systems of banks are granted for short periods of 3, 6 and 9 months, or for longer periods of 1, 2 and 3 years.

This enables the small farmer to manage his affairs on a spot cash basis, and encourages the larger landowner to equip his farm with modern machinery and conduct his business in such a way as to secure all the profits to which he is legitimately entitled. The long-time loans also enable farmers to purchase and gradually pay for their farms. It means a system of cooperative effort, not alone in the furnishing of cash capital to each farmer at a low rate of interest, to plant, cultivate and harvest his crop, but it means cooperative effort in marketing the products of the farm at profitable values to each producer.

In Germany alone, last year, these three systems of agricultural cooperative banks did a business among the farmers of over five million dollars, and Germany is comparatively a small country.

What we need is capital in abundance, and which we can secure by the enactment of laws which will permit the farmers to liquify their assets, the same as the merchants and manufacturers, and which has been so successfully done in European countries for the past fifty years.

There are no trusts in Europe which handle farm products. There can be none. Under these systems of rural finance and

cooperative agricultural societies, the farmers market their products direct to the retailers and consumers.

The middleman, the jobber or the trust have no standing in Europe and could not get a foothold if they tried, because they could not get possession of any part of the farmers' products.

OUR SYSTEM TOO LIMITED

The present system of rural finance in this country is too limited on the one hand, and is expansive at only one period of the year.

We have expansion of our currency in the South during the spring months of planting and cultivating the crops, while we suffer from contraction during the fall and winter months of marketing the farm products.

The eastern banks lend millions of dollars to southern banks during the spring to aid in financing supply merchants and such farmers who are able to secure cash advances. But these loans are made payable in October and the eastern banks call this money promptly from their southern borrowers, hence the local banks call the supply merchants, and these in turn call the producers, and the cotton crop, the only security for southern credit, is forced from the fields to the market as rapidly as it can be harvested, ginned and baled.

This system of business cuts both ways. It means enormously high rates of interest which the farmers must pay for supplies bought on credit to grow the crops, and it further means the exaction of a tremendous penalty from the farmers in the fall and winter months in being forced to dump an enormous oversupply of cotton on the markets, the price of which is oftentimes unmercifully hammered down by speculative manipulation.

I am not familiar with the methods employed in your farming operations in this section, but I assume that your experiences are somewhat similar to those prevailing among the agricultural population of the South. Southern farmers are progressing and succeeding even with the handicaps I have outlined, but their advancement and development would be far greater if their financial opportunities were made more liberal and attractive.

The farmers must be free from the controlling influences of

Wall Street and the present unfair system of American financial operations. They must be placed in possession of a system of finance made possible through the liquification of their own assets and under their own control and operation.

ASSEMBLING A COMMISSION

The Southern Commercial Congress, with headquarters at Washington, D. C., is now actively engaged in assembling a commission of two delegates from each state to go to Europe in April and make a careful and thorough investigation of the rural banking systems which have been in such successful operation in foreign countries. This movement has the endorsement of the United States Senate, the President of the United States and the governors of the various states in the union.

Many of the states have already acted upon this matter and have appointed delegates and secured the necessary appropriations for expenses. I feel assured that this state will be fully represented on the commission.

The time consumed in the investigation will be three months, and the average expense per delegate will be about \$1,200. It is now practically assured that nearly every state in the union will be represented on the commission.

The American ambassadors to the various European countries will give every possible cooperation to the committee during the time of the investigation.

WANT OF COOPERATIVE EFFORT

As an evidence of the absence of cooperative effort and the imperative need of some system of sound finance to aid the farmers in marketing their products, I desire to call your attention to the crops of cotton produced in the South during the years 1910 and 1911. The crop of 1910, amounting to 11,500,000 bales, sold in the markets for \$963,000,000. The crop of 1911, nearly 16,000,000 bales, sold for only \$860,000,000. The crop of 1911, although 35 per cent. larger than the crop of 1910, sold for \$103,000,000, or 10 per cent. less than the smaller crop.

An absence of cooperative effort and inability to market the crop of 1911 according to an intelligent and business-like system

caused the cotton growers to lose \$425,000,000 in the short space of six months, because they should have received practically the same price per pound for both crops.

Our whole system of production and marketing needs revision, but I do not see how proper and protective methods can be introduced and put into practical effect until a system of rural finance has been worked out which will enable the farmers to cultivate their crops at a minimum of expense and then hold and market them only as they are required for consumption in the legitimate channels of trade.

EFFECT OF NEW SYSTEM

If this commission should be able, after a thorough investigation of the European banking systems, to devise practical plans for meeting the requirements for an abundant supply of ready money for producing and marketing our farm products, they will succeed in lifting the yoke from American farmers and lay the foundation for a revival in the interest of agriculture which is essential in working out a scheme for the right kind of progress among our rural population.

There can be no general thrift or progress in agriculture that is based largely upon tenantry. We must encourage the ownership of small farms by small landlords, and follow that up by developing a practical system of financing the small farmer, as well as the large landowner, and encouraging his active cooperation in the matter of marketing his farm products so that the result of his labor will bring to him and his family a higher measure of satisfaction and a richer reward in the future than has been realized in the past.

When we have placed the dynamic dollar in the hands of the farmers and presented a medium through which they will be the masters, in the marketing of their farm products, in place of being the slaves to the buying world, then will the farm become the mecca of present and future generations which are now seeking the more attractive influences of the town and city. The poverty and congestion of city population should be relieved by a life of freedom and peaceful contentment in the country.

FEDERAL BANKING LAWS

American farm lands have been outlawed under the Federal Banking Acts, denying landowners the right to secure loans, or make liquid the most valuable asset and the best security in the nation.

This may have been caused by the fluctuations in land values due to the continuous opening up of great government reservations in our western territory. But these open lands have now become homesteads, and improved farm lands have reached a stable value which must become dearer in price as time rolls on. The incentive for refusing to recognize land as a safe and valued asset for capitalization in the modern business of agriculture no longer exists.

The present valuation of improved farming lands in the United States is thirty billion dollars, and of this amount, over seven hundred millions is in this state. The total amount of bonds and stocks in circulation in the United States is thirty billion dollars, and our total circulating medium of gold, silver and paper money amounts to three billion dollars.

The landowners of the United States therefore possess landed securities in valuation ten times in excess of the entire circulating capital of the nation and safer than any government bond or other class of securities deposited in the vaults of the federal treasury.

To liquify this great asset, as it has been so successfully done in European countries, will forever solve the problem of agriculture in this country, and enable the farmers of this and other sections to control the production and marketing of their crops with profit to themselves and satisfaction to the great masses of the people. It will mean the rapid multiplication of small landowners; a more advanced system of agriculture, and a higher type of progressive and thrifty citizenship in rural life.

The best efforts of our state and federal governments, and the varied interests of industrial and financial life in this country, should be directed for the next quarter of a century toward reforming and revolutionizing our present system of farming, because the farm is the foundation of all prosperity in every department of human endeavor, and the greater the success of the farmer the greater will be the standing and position of our country among

the nations of the world and the greater will be our measure of progress and happiness at home.

Whatever benefits agriculture benefits all things else, and whatever retards agriculture checks progress and advancement in all other departments of commercial and industrial life.

CONCLUSION

In conclusion, Mr. President and gentlemen of the society, I sincerely trust that the agricultural interests of your great state will be aroused to the splendid future possibilities to be realized from the proper development of your agricultural resources.

The whole solution of our present farming problems lies in cooperative effort and the building up of a strong system of rural finance.

No country possesses such marvelous agricultural resources as the United States. No country presents a brighter or more attractive future to the rural population of our great nation.

Providence has blessed the American farmer with everything to be desired in soil and climate. The finest consuming markets and distributing centers are located at the very doors of our farmers. They must awake to these magnificent opportunities and in the future carve out for themselves a business of profit and pleasure second to none other within the reach of man. The farmer should be the master of his business and his vocation should typify the ideal life.

When the business of agriculture has reached that pinnacle of dignity and success which it should command, and to which it is so clearly entitled, rural life will receive an impetus which will place it at the very masthead of the most attractive and successful avocations in this country.

With your great agricultural university offering unprecedented opportunities to your young men to prepare and equip themselves for scientific agriculture, there is every incentive for a rapid transformation of your undeveloped lands in this state into fertile and wealth producing possibilities.

Train your boys and girls for the farm and teach them that success in rural endeavor is not only the highest avocation in life for them, but it represents the safety and progress of the nation.

Let every farmer in the American Union unite in solving those financial and commercial problems which alone represent the only obstacles to successful agriculture. As the representatives of the greatest industry, let us work together for the upbuilding and success of that industry.

For me and my descendants there is no sectionalism in the United States. We all live under the protection of the stars and stripes, under one constitution, and with but one great purpose in our hearts, and that is, a common cause for the advancement of the happiness and prosperity of every law-abiding American citizen and the upbuilding of the future strength and magnitude of this great nation.

We must prepare for the evolution of modern thought and action in the progress of human events, and by the application of scientific agriculture to culture of the soils, the adoption of diversification of crops, and by cooperative effort in the marketing of our farm products under modern business methods, cause the flower of prosperity to bloom over the hills and valleys of our native land.

COMMISSIONER HUSON: I know we are all delighted with Mr. Jordan's address. This great subject, so prominent now in the minds and thoughts of all our people that has been presented here to-night in such an instructive and eloquent manner, has, I am sure, received added impulse in the State of New York.

The next subject upon the program is very closely related to the address of Mr. Jordan, "Can European Cooperative Methods be Applied to American Farming," to be discussed by Professor Kemmerer, of Princeton University, whom I now have the honor of presenting to you.

CAN EUROPEAN COOPERATIVE CREDIT METHODS BE APPLIED TO AMERICAN FARMING

E. W. KEMMERER

"Credit supports agriculture as the cord supports the hanged." Such was the dictum of Louis XIV; and such seems to have been the philosophy, until recently at least, of a substantial percentage of American farmers. Far different has been that of the European farmer. I know of no more striking phenomena in the

history of modern credit, than the wonderful development of cooperative agricultural credit in Europe during the last two generations, on the one hand, and the utter failure, on the other hand, of such credit to develop in the United States. Contrast these two propositions. In 1909 there were in Germany nearly 13,000 rural cooperative banks affiliated with one federation alone (that of Darmstadt) with a membership of 1,163,000 persons, and a total business, incoming and outgoing, of over a thousand million dollars. Those institutions had deposits of over \$375,000,000 and outstanding loans to farmers of about \$400,000,000. Moreover these figures do not cover anything like all the cooperative agricultural credit of Germany alone.

In the same year there was not a single cooperative agricultural bank in the United States and this was true despite the substantial development of other forms of cooperation among American farmers, and despite the fact (cited by Mr. George K. Holmes, Statesman of the Department of Agriculture at Washington) that "whole counties had been populated in the Northwest by European agriculturists who came from neighborhoods where they were familiar with agricultural credit."

My subject to-night is in the form of a question "Can European Cooperative Credit Methods be Applied to American Farming?"

What I have to say will be limited chiefly to short-time agricultural credit as distinguished from long-time mortgage or land credit. The former is used primarily to obtain funds for efficiently operating the farm; the latter for buying the farm itself.

Assuming that you are familiar with what these European methods are, the first question to ask is: Why have not European methods already been adopted in this country? The German cooperative agricultural banks have been in successful operation for two generations. Why have they not been brought to the United States, as they have to most European countries, and been adapted to American conditions? This question is much easier to ask than to answer. The fact that they have not been brought here naturally creates the suspicion that there may be some insuperable obstacles to their development in this country. No such insuperable obstacles in my judgment exist, and I believe that the

failure of these institutions to take root and grow in this country can be explained on other grounds, among which may be mentioned:

1. Our wonderful agricultural domain where good land could be had until recently almost for the asking, and where for generations land was so cheap and labor and capital so dear that extensive cultivation was generally unprofitable.

2. The prosperity of our farmers who have not been forced by dire necessity to resort to usurious credit as were the farmers of Germany during the first half of the last century when the co-operative banks of Germany were established.

3. The unsettled character of a considerable part of our agricultural population, as it has moved continually westward in taking up new lands, and more recently as it has been retracing its steps or moving northward. The population of many agricultural communities has been so changeable that it was difficult for the people to get together on a proposition involving so much mutual confidence as does a cooperative bank.

4. The heterogeneous character of many of our rural communities, resulting from the westward movement of our population and from our large immigration from different parts of Europe. Here we have many different nationalities thrown together in one section — Americans, Germans, Swedes, and Italians.

The size of the farms and the financial responsibility of the farmers moreover are very unequal.

5. The isolation of our farmers in this country of large farms and magnificent distances. Mutual confidence which is the cornerstone of cooperative agricultural credit requires that the co-operators should be able to get together easily, and that one should be able to know what the other is doing.

To emphasize most of these obstacles to-day is to brand oneself as belonging to a past generation. Our domain of free arable land is practically gone, good farms must be bought, and for them ever increasing prices must be paid. The era of hand cultivation is giving way to that of farm machinery propelled by horse-power and even by steam, gasoline, or electricity, with its resulting great increase in the efficiency of labor. Eleven years ago the editor of the *Dakota Farmer*, in his testimony before the United States

Industrial Commission, put the matter tersely, and with little exaggeration, as affecting his own section of the country, at least, when he said: "When I first worked out it took five binders to follow a machine, one man to rake off, and one to carry the bundles together. Now the hired girl frequently drives a machine that does the whole business." The increase in the value of farm implements and machinery per acre of land in farms from 1900 to 1910 was 62 per cent. Recent years have also witnessed a great increase in the demands upon farmers for working capital in the form of artificial fertilizer, the expenditure for which in the United States nearly doubled in the twenty years ending 1899, and more than doubled again in the ten years 1899 to 1909.

As the result of such tendencies and of the rapid depletion of our free domain, farming in the United States is losing its old time kinship to mining and becoming more like manufacturing. More and better machinery and more power are needed on most farms in the interest of efficiency. This calls for short-time credit, but a supply of good machinery and of power require a fair sized farm for their efficient utilization—hence the need for larger farms and for mortgage credit to make their purchase possible. The manufacturers' business is financed largely through credit and a given capital is thereby rendered manifoldly efficient. There is a strong prospect that a growing percentage of our best farmers will likewise through the same use of credit make their limited capital do more efficient work in the future.

Not only will the farmer need credit in the future more than he has in the past, he will also be in a better position than he is now to get it.

Our farming population is becoming more settled now that the free lands are practically gone and the frontier has disappeared. The isolation of the farmer is rapidly becoming a thing of the past, with the advent of rural free delivery, rural telephone, the automobile and the parcel post. The farmer no longer buys gold bricks nor is duped by fraudulent lightning rod schemes except in the pages of the comic supplements.

When seeking credit the farmer can offer better security than ever before. His markets are larger, better organized, more cer-

tain, and more accessible. The risk of crop failure is less, thanks to the wonderful progress of scientific agriculture. There are few pests which cannot now be readily controlled by the intelligent farmer, who takes time by the forelock. The problem of moisture is growing less serious every year with the improvements in irrigation, dry farming and the more scientific diversification of crops.

Farmers furthermore are getting together more than ever before; they understand each other better; and there is a growing sense of unity of interest. This has been stimulated in part by the exactions of the middleman to whom the farmer sells and from whom he buys. It finds expression in meetings such as this, in the grange, the agricultural college, and in the increasing resort to cooperation, as in cooperative buying, selling, cooperative creameries, cheese factories, grain elevators, telephone exchanges and the like.

But, says the sceptic, granting that all this may be true, it does not necessarily follow that we need cooperative agricultural banks. The United States already has over 20,000 commercial banks, national, state, and private, a large proportion of which are in small towns and villages, and all of which can loan to farmers. "And, as a matter of fact," the sceptic adds, "a great many of these banks do loan to farmers."

For over a year, I have been making inquiries in different sections of the country as to the extent to which responsible farmers could secure of local banks an adequate supply of short-time credit on reasonable terms. The replies to these inquiries show widely divergent conditions in different sections of the country, and often in neighboring parts of the same section. In some sections farmers seem to be well provided with credit facilities at fair rates. One informant, for example, in Nebraska writes: "I have never felt that in this locality farmers suffered in any way from lack of credit facilities. In this section, farmers use short-time credit to fully as great an extent as do business men in the city and smaller towns. In fact, I think it is true that in the smaller towns the bankers favor the farmers in preference to the small business men." Similar reports have been received from parts of Indiana, and from Iowa. The latter state appears to be par-

ticularly well provided with banking facilities for farmers. Although ranking fifteenth in population among the states of the Union it ranks first in the number of banks, many of which are said to be owned and controlled by farmers. For some sections, on the other hand, the testimony is that adequate credit facilities are not available to small farmers at any price. This is the situation in many parts of the South, although there has been in recent years a rapid growth of banking facilities in that section. In still other sections, it is reported that the rates charged farmers, in the form of interest and commissions, are greater than those charged merchants of equal responsibility. In some sections farmers complain that bankers treat them as if they were conferring a great favor in extending them well protected loans at the market rate of interest. Conditions sometimes vary decidedly in neighboring communities, the farmers in one neighborhood being well provided with credit facilities, and those in another a few miles away enjoying very scant facilities. Great differences of this kind in different localities are found in New York State.

The Department of Agriculture at Washington has just completed an investigation based upon a questionnaire sent to about nine thousand persons throughout the country, approximately one-third being farmers, one-third bankers, and one-third rural merchants. These nine thousand persons were requested to state what percentage, in their opinion, of the farmers owning their land and able to give good security or indorsed note would use more borrowed money conservatively and profitably, if they could secure it on reasonable terms. Some of the correspondents did not answer the question, and some of the answers received could not be used. Of those received which indicated a correct understanding of the question, 26 per cent. replied that no farmers in their communities would so use more borrowed money, while 74 per cent. replied that on the average about one-third of the farmers in their communities would use more borrowed money conservatively and profitably. Almost the same percentages were shown for tenants able to give good security or an indorsed note. On this subject of the adequacy or inadequacy of existing credit facilities for farmers, the information available is altogether too scant to justify a safe judgment. Neither the comptroller of the currency



FIG. 36.—PROFESSOR E. W. KEMMERER, PRINCETON UNIVERSITY.

at Washington, nor any of our state banking departments, so far as I know, have made a careful inquiry of the banks under their supervision as to the amount, character and terms of their agricultural loans. Such investigations are imperatively needed, as a first step in the movement for improving agricultural credit facilities in this country. We should know more about present agricultural credit needs and the facilities for meeting them, before we undertake any wholesale reforms.

The statements just made as to the great differences in the needs for agricultural credit in different parts of the country suggests one of the great merits of the cooperative credit plan; i. e., its adaptability to widely divergent local conditions. In Europe there are cooperative credit institutions like the German *Landschaften* to provide mortgage credit for the landowner, others like the *Schultze-Delitzsch* banks to provide short-time credit for the merchant, professional man and laborer in the cities and towns, as well as for farmers; others like the *Raiffeisen* banks and the *Wollemborg* banks of Italy to provide short-time credit primarily or exclusively for the farmer. There are cooperative banks with large capitals and cooperative banks with practically no capital; banks with unlimited liability of shareholders, banks with double liability and still others in which the shareholders' liability does not extend beyond his share of the capital and accumulated surplus; there are cooperative banks with handsome buildings and a large and well-paid administrative force discharging in regular order a constant round of business, and there are others where the administrative work is practically all gratuitous — banks like the typical *Raiffeisen* bank described by Fay as follows "It is a small single room, probably at the back of a farm building, opened twice a week and presided over by a single occupant — the accountant. Business is apt to be found desultory; a small child brings in a few savings; an hour afterwards a palsied old man, signing by a cross, draws out a couple of pounds, and so on to the end of the day, the really important business being done at the weekly meeting of directors."

If cooperative credit is to have a vigorous growth in America it will need to be given a fairly free hand to adapt itself to local conditions. There are many sections of the United States in

which it would be premature at the present time to attempt to develop cooperative agricultural banks, either because present banking facilities for farmers are reasonably adequate, or because there is not sufficient confidence of farmers in each other to make credit cooperation possible. Cooperative credit cannot be superimposed upon the country, either by the federal government or by the state governments. It must have its beginnings and its early growth — if that growth is to be vigorous — in small local banks established here and there throughout the country where rural credit is most needed, and where farmers have already learned the lessons of cooperation through experience with other cooperative enterprises. From these nuclei it will extend to other places.

Farmers should guard themselves against relying too much on the government in this matter. The federal government has already performed the chief services which should be expected of it in the campaign of education it has conducted. It has published and scattered broadcast a mass of valuable literature showing farmers how cooperative credit is being carried on with wonderful success in Europe. From the state governments a small amount of legislation will probably suffice. Cooperative credit societies are not commercial banks, and they should be freed from many of the hampering provisions of commercial banking laws which now apply to them. Massachusetts in 1909 set the other states a good example in her law for cooperative credit societies. A reasonable amount of government supervision, however, on the part of the state banking departments seems desirable. The word cooperation is derived from two Latin words: *con* meaning "together," and *operare* meaning "to work." It means literally "together-working." If it ever succeeds in the United States, it will be due to the "together-working" of the farmers, rather than to the overworking or the paternalism of the state. The initiative in the establishment of rural credit banks should be taken by the farmers themselves, and they should boldly assume responsibility for the scheme's success. American farmers have a tremendous advantage in this movement over the European farmers of a half a century ago; they are much better off financially than were their European predecessors, and they have had

the advantage of Europe's long and varied experience. If the American farmer cannot make it go without government subventions, I greatly overestimate his initiative, his judgment and his backbone.

When these societies have proved a success, have accumulated a substantial capital and surplus, and in other respects established themselves upon a sound financial basis, then and not until then will it be reasonable to expect the government to cooperate with them by using their central institutions as depositories of postal savings and other government funds.

Much is being said upon the question of limited vs. unlimited liability of shareholders. The early cooperative credit banks in Germany employed the principle of unlimited liability. This was true of the Schultze-Delitzsch banks and of the Raiffeisen banks. The former are now rapidly adopting the principle of limited liability, while the pure Raiffeisen banks still hold to the original principle, although some of the offshoots of the Raiffeisen system in other countries have given it up. There is much to be said in favor of unlimited liability in the early stages of cooperative credit, particularly among farmers of little capital. When members of a cooperative bank are held personally responsible for the failures of each other, they are careful to elect only honest responsible people to membership, they use great care in the loans they grant, and concern themselves with the disposition that is made of the funds borrowed. Furthermore the ability of a credit society to borrow funds from other institutions will often be greatly enhanced if the members of the society are subject to unlimited liability. On the other hand many persons who would make most desirable members of cooperative credit societies would be kept out by an unlimited liability requirement. Such a requirement should not be made unless it is necessary to secure a reasonable amount of funds for beginning business. Our American farmers as a class are in a much stronger position financially than are the farmers of Europe. In a great many American communities sufficient funds could probably be secured for a good beginning without the adoption of an unlimited liability obligation. In Canada unlimited liability has not been found necessary. A double liability as in the case of our national banks, or even a

triple liability, might be desirable. As the cooperative societies prospered, accumulated a surplus, and leagued themselves together into district and central associations the arguments for unlimited liabilities would grow weaker. While I believe that the principle of limited liability is better adapted to American conditions, than that of unlimited liability, there are doubtless some communities in which the latter would be preferable, and I believe it would be a mistake to lay down any rigid rule that would prevent co-operators from adopting unlimited liability when they thought it desirable.

The conclusion may be summarized in a few words. Farming is the only important line of business in America to-day, the operations of which are not financed extensively by means of credit. The conservative use of credit for productive purposes renders a given amount of capital manifoldly efficient. Efficiency is the watchword of the twentieth century business. The progressive farmer will resort to credit to a greater extent in the future than he has in the past. Much of this credit may be secured from existing banks; and bankers will more and more cater to the trade of farmers. In many sections of the country, however, credit facilities for farmers will prove altogether inadequate; in other sections the farmer will be unduly exploited by high interest rates and commissions. He has it in his power to provide credit facilities for himself when those available are inadequate, and to prevent extortionate rates when such rates are charged. He may adopt the simple expedient which has stood the test of a half a century in Europe, of capitalizing his own industry and honesty in the foundation of cooperative credit banks. He may accumulate the needed funds through his own savings, and through the pledge of that high type of security the good name of a neighborhood group of honest and thrifty farmers. In doing so he should not forget that the cooperative agricultural bank is a new plant for American soil; that the seeds should be carefully selected, the best soil chosen, and the first crop should be small and well cultivated, if good seed is to be available for the future. The first crop should not be raised in a government hothouse.

The meeting was then adjourned.

WEDNESDAY, JANUARY 15

MORNING SESSION

Meeting called to order by President Sisson.

THE PRESIDENT: The first item of business is the report of our Secretary, Mr. Albert E. Brown of Batavia.

REPORT OF THE SECRETARY

ALBERT E. BROWN

The proceedings of last year, of course, were published in book form and mailed to all members by the department of agriculture. Copies of the proceedings of this meeting will be printed in the same form and mailed to the members.

The old life membership list of this society ran up in the neighborhood of 1,600. It has been revised from year to year and especially the first year that the state took over the State Fair. At that time there were, I think, about 1,600 names on the life membership list. It had not been revised for several years. Several hundred names were cut off, and each year since it has been revised until there are now 953 names on the life membership list. Many of these people are undoubtedly dead and we should like to get that list still further revised so as to keep it up to date. We all know that the life members of this society are entitled to free admission to the State Fair, and being connected with both institutions I came in closer touch with this proposition this year than I ever had before. There were 254 of the life members who applied at the State Fair for their rights of free admission this last year. There was some trouble and dissatisfaction among the old life members that was embarrassing to me particularly, because the State Fair Commission last year decided to change from the ticket system to the cash gate admission. Previous to that time there had been life membership tickets made out and mailed to those who applied for them, good for one admission a day during the week, and others who applied during the fair were given the

same. Of course, last year on the cash system that could not be done. There were no tickets printed of any kind. The course adopted was that the life member presenting himself at the fair should pay his admission and go to the treasurer's office and if I was satisfied that he was a life member his 50 cents was refunded. That was done to 253 who did attend the fair — there were 567 admissions, that is, they attended on an average twice, and they were given their 50 cents back for each admission. But quite a number of these people came in with the idea that they would receive \$3; came in Monday, for instance, and they thought they were going to be given 50 cents a day for the six days, or if they came Tuesday they expected \$2.50, which of course they could not get.

THE PRESIDENT: You have heard the report of our Secretary. Are there any remarks?

MR. T. B. WILSON: Does Mr. Brown make any recommendation as to what might be done to eliminate this difficulty?

MR. BROWN: I could not. If anyone has a suggestion of that kind I am sure it would receive attention because the State Fair Commission wants to adjust that if there is any more satisfactory way. I do not know how there is inasmuch as these turnstiles will be used another year. They are a success so far as getting the money is concerned, and that seems to be the only embarrassing part of it. The trouble with the old ticket system was that two-thirds to three-quarters of all the admissions to the fair were by people who bought railroad tickets with an admission coupon attached. For instance, a year ago last fall, paid admissions to the State Fair in round numbers were \$85,000. The railroad coupons amounted to more than \$64,000. The cash that we took in was about \$20,000, and it was pretty tight squeezing to pay the running expenses during the fair; to pay the racing purses and things of that kind. Then we had to wait nine weeks before the New York Central made a settlement. The New York Central and West Shore Railroads owed something like \$36,000 of that \$64,000. We could not pay our bills until we could settle with the railroads, but last fall we had all the cash every night.

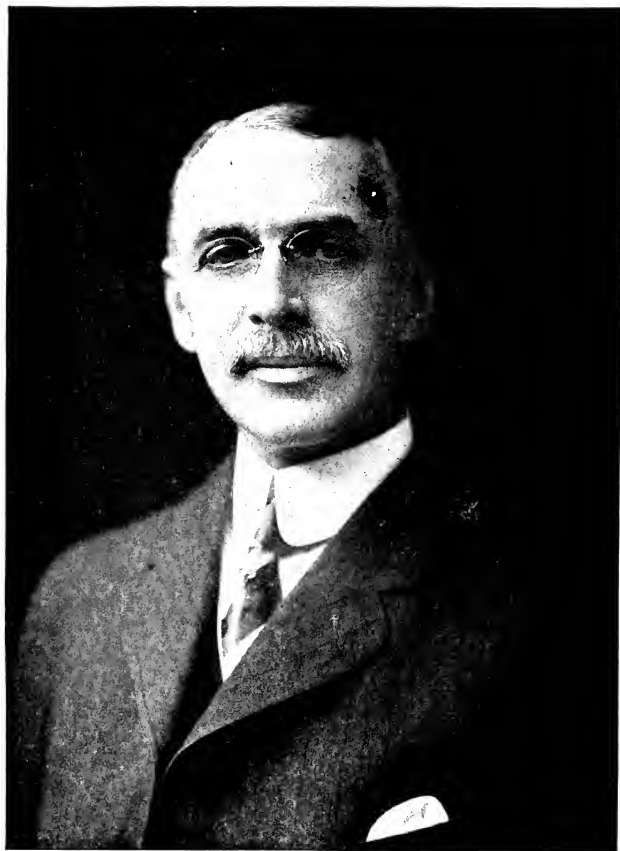


FIG. 37.—ALBERT E. BROWN, SECRETARY.

MR. TUTTLE: I do not see why the embarrassments that our Secretary speaks of could not be easily avoided by allowing the holders of life-membership tickets to enter the grounds at the entrances where the turnstile does not exist. I know last year that a number of people were admitted to the fair on a proper voucher. For instance, working at the fair last fall I was endeavoring to get some material for the Food Investigating Commission. Mr. Huson, who was a member of that commission, very kindly volunteered to delegate certain of his force to assist in getting the information. Now, I know that they had a red ticket and they were admitted. They did not go through the turnstile. What is the reason these life-membership ticket holders may not be received in the same way?

MR. BROWN: There were no red tickets printed. They had a red button, and they went through a turnstile further down.

MR. VAN ALSTYNE: Would not that be open to the same objection as the old ticket system, that they would be transferable and the fellow at the gate would not know whether the holder was a member or not?

MR. PARK: I was an exhibitor at the fair last year. Each and every exhibitor, I think, went through the exhibitors' gate. I do not see why the life members could not go through the same gate, which is only a few steps from the other turnstile.

MR. SCHRIVER: My opinion is that if the state or State Fair Commission made a contract with the life members of this association, that contract ought to be sacredly kept, whatever difficulties or embarrassments or nonsensical notions might be involved. We should, whatever we do, command the respect of the general population. We could afford to sacrifice a little inconvenience and do a little extra work and perhaps lose 25 cents here and there, to maintain the respect and consideration of the agricultural community. That is my judgment.

On motion the report of the Secretary was accepted.

THE PRESIDENT: We will now listen to the report of the Treasurer, Mr. Harry B. Winters, First Assistant Commissioner of Agriculture.

TREASURER'S REPORT

HARRY B. WINTERS

RECEIPTS

Balance on hand, as per last year's report..	\$200 19	
Dues received, 26 life members.....	260 00	
Dues received, 64 annual members.....	64 00	
Contributions	6 00	
Total		\$530 19

DISBURSEMENTS

Joseph P. Hogan, show cards.....	\$2 50	
E. M. Effler, services and expenses.....	13 75	
W. M. Bates, services and expenses.....	10 75	
Christopher Degenaar, services.....	2 00	
Frank J. Deevy, services.....	2 00	
Chester B. Smith, services.....	2 00	
F. W. Sessions, for printing, etc.....	15 00	
F. W. Rockwell, hotel bill for speakers....	19 85	
C. H. Harding, printing badges.....	13 00	
A. R. Zita, Orchestra.....	26 00	
C. P. Brate, printing.....	10 80	
E. H. Chapman, services.....	2 00	
Brandow Printing Co., stationery	28 00	
Brandow Printing Co., programs	25 00	
Returned dues overpaid.....	1 00	
Postage	1 00	
Brandow Printing Co., printing.....	12 75	
Ezra A. Tuttle, printing and postage, Pro- ducers' and Consumers' conference.....	17 25	
C. H. Harding, printing.....	6 50	
F. W. Sessions, printing and postage, etc..	26 82	
Addressing envelopes, etc.....	19 50	
Total		257 47
Balance on hand, January 11, 1913.....		\$272 72



FIG. 38.— HARRY B. WINTERS, TREASURER.

100

THE PRESIDENT: I hold here a report from the Auditing Committee appointed yesterday morning, which reads as follows:

“Your committee examined the accounts of your Treasurer Mr. Winters, and found them correct in every respect according to report made by him to the society.”

(Signed) C. R. WHITE,
WILLIAM HAYDEN.

On motion the report of the treasurer was accepted and filed.

MR. DILLON: Our treasury is not very much burdened with funds and we do not have a very extensive membership. It seems to me that we ought to make some little effort to increase the membership and incidentally the funds.

Now to put that thought in concrete form I want to suggest,—you can accept it as a motion if you like,—that the secretary, treasurer, executive committee or the officers in general, prepare a circular letter to send out to a list of at least 10,000 to 25,000 farmers in this state about the first of next January, announcing our annual meeting, giving some little intimation as to what the convention is going to be and what it is going to discuss, and asking for memberships; life members, or the option of an annual membership to those who do not feel that they can come in with a life membership. That will not entail an expense in excess of \$100 and I think it ought to materially increase our membership, and very much increase our revenues. If that thing could be continued year after year, and probably increased if the returns warranted it, we might have a society here that would be larger than we have at present.

THE PRESIDENT: Mr. Sessions, in his report for the Committee on Publicity, spoke of returns from a circular letter sent out at an expense of \$20. He received \$180 and 20 annual members, they took in \$205 with their own time and energy. That is an indication of what might be done.

MR. SESSIONS: We sent out about 1,050 letters but they were not sent to a list such as is proposed by Mr. Dillon. They were simply sent to each member asking that member to constitute him-

self a committee of one on membership and to make an effort to secure from his neighbor or some friend or acquaintance an application for membership in this society. That was the appeal we made. We did not feel justified in going ahead without some authority from the society itself on an extensive mail campaign as Mr. Dillon has suggested, but I think it would be a good thing to do. I think it would show results.

THE PRESIDENT: We shall take your suggestion, Mr. Dillon, under consideration.

MR. M. G. KAINS: I suggest that as a part of this publicity business or campaign for membership, the agricultural press and the county press be notified at least two weeks in advance of the circularization so that as much as possible the objects of the association and the program for the following meeting shall become diffused in the public mind, especially the minds of the farmers. It is one of the great difficulties that all of the agricultural and the weekly papers labor under, that they do not get advice in time to do the association nearly as much good as they would like. For this meeting the program reached me in time to make only one announcement and that a very small one.

MR. BOSHAERT: If some of these ideas imparted by Mr. Dillon and others are carried out it seems to me it will involve a considerable extra amount of labor on the society and I move that the president of this society be instructed to appoint an assistant secretary, who shall be a resident of Albany, to help and aid the secretary.

The above motion was carried.

THE PRESIDENT: We are ready for reports of special committees and I believe it is proper to receive the report of the Committee on Resolutions at this time.

REPORT OF COMMITTEE ON RESOLUTIONS

II. O. PALEN

Your Committee on Resolutions submits the following report for your consideration:

The first recommendation is on the report of the Committee on Agricultural Education, a very important report which was

referred to this committee because of a resolution at the end. It does not seem to me, Mr. President, that it is really a complete disposition of the report, merely to adopt the resolution, but that is all this committee could do and so I will read the resolution at the end of the report, and this I consider as very important, bearing on important legislation at this session of the legislature.

THE PRESIDENT: I believe it was the presiding officer's idea that it was handed you to pass upon and if it suits you, the society can act upon it.

MR. PALEN: The resolution covers the point about which there has been quite a little discussion on the side, the question of the autonomy of the state in the use of funds that may be given to it, or returned to it from the national government, that have been collected in the ways in which the national revenues are gathered. I shall read the resolution:

"Therefore, be it Resolved, That if the policy be adopted of returning to a state for specific purposes a portion of the income that the federal government derives from the indirect taxation of the citizens of that state, the state should have the same liberty in the application of these funds to the purposes named that it has in the use of any other portion of its income."

That "the policy of the further introduction of instruction in agriculture into the public schools; and that to better accomplish this result, plans should be perfected as rapidly as possible for maintaining agricultural instruction with larger allotments; and that an allotment be provided each school, union or high school, teaching a class of not less than fifteen in agriculture, and for the common district school giving an approved course in nature study."

The committee commends the report in every particular and I wish to say that Dr. Jordan, who had to go home last night and who was a member of the committee on resolutions, gave us a lengthy talk on the importance of certain features of this report.

MR. DENNISTON: I move the adoption of the report.

THE PRESIDENT: In view of the peculiar situation in reference to this particular report I think this is the proper procedure and Mr. Denniston has now moved the adoption of the report of the Committee on Agricultural Education, it having been approved by our committee on resolutions.

Motion carried.

MR. PALEN: WHEREAS, There is universal complaint against the high cost of living and accumulating evidence of its further increase; and

WHEREAS, Investigation shows that the price of food stuffs at the farm scarcely covers the cost of production, and in many cases do not promise the cost of shipment, along with the result that they are left to rot on the ground, while the cost to the consumer is maintained at the high price of unproductive seasons; and

WHEREAS, The investigation further shows that the difference between the low price to the producer and the high cost to the consumer is caused by the wasteful methods of transportation and excessive charges of transportation companies and middlemen; and

WHEREAS, It is generally conceded that the most effective way to stop this wasteful and expensive method of transportation and distribution is through the cooperation of the producer and consumer in the matter of packing, shipping and buying farm products;

Therefore be it Resolved, That the legislature of the State of New York be requested to pass a bill authorizing the organization of cooperative producing, operating, marketing and buying companies by producers and consumers, and that this statute surround such organizations with every possible safeguard and precaution of law to the end that the cooperative principle may be maintained. Among these provisions we recommend:

1. That no company or association be allowed to use the word cooperation in its name or literature unless organized under the cooperative law.

2. That members in cooperative societies be obliged to hold at least one share of the stock of the company.

3. That the stock held by one person be limited.

4. That dividends on the stock be limited.
5. That companies be organized on the basis of one man one vote, irrespective of the stock held.
6. That the principle of voluntary membership with an equitable participation and control be maintained as an essential principle in all cooperative enterprises organized under the act.
7. That provision be made by which members may legally bind themselves to market certain products, and conduct certain other lines of business, through their cooperative societies and to enforce such agreements.

The Committee on Resolutions recommends its adoption.

THE PRESIDENT: This very important recommendation is before you, gentlemen.

On motion the resolution was adopted.

MR. PALEN: WHEREAS, It is universally conceded that the most effective way to reduce the high cost of living in cities and at the same time return a fair profit to the country producers, is through a carefully organized system of cooperation in packing, shipping, marketing and buying of food products, thus bringing the producer and consumer together and eliminating largely, if not entirely, the expense and waste of intervening agencies, and

WHEREAS, Our people are as yet unfamiliar with cooperative work and cooperative organizations, considerable work must be done to educate and organize producers and to supervise and direct the work in its initiative stages, and

WHEREAS, Our society is without sufficient funds to pursue this initiative work,

Therefore be it Resolved, That the New York State Legislature be requested to appropriate \$20,000 to be expended through the department of agriculture for the purpose of cooperative organization among the producers of this state, and this society hereby tenders the services of its members to the department of agriculture for such advisory and personal assistance as they may be able to render in the organization and development of the work.

The committee recommends the adoption of this resolution.

I would say that the resolution was gone over carefully with the Commissioner of Agriculture and he is ready to do all he can to bring about success.

MR. DILLON: I think we ought not to put that resolution through, to be perfectly frank about it. I am saying so because I wrote it. I do not want to put any resolution through in this or any other meeting where the farmers have not had a chance to discuss and to tear it to pieces and express their views on it. I am prepared to defend it right here in the open. I invite the criticism of any farmer with honest views on the subject to get up and oppose it. I should like to hear Mr. van Alstyne's views on the subject.

MR. VAN ALSTYNE: I very much regret to take the time of the meeting and my own as well, but I never am unwilling to stand for a position when I believe I am right, even though as in this case I am the only one. Now, you are going to the legislature and you are asking for \$20,000 to do a certain thing, organize the producers of the state. Let us take up that phase of it just for a minute. It comes pretty near being class legislation, does it not, an appropriation to organize the farmers? I am a farmer and I will stand for anything that is for their interest but I do not believe the farmers want — and if they do, I do not believe they ought to have it — any legislation from the state or national governments that is for their benefit solely. The appropriations for agricultural education and extension work among the farmers are only warranted because they affect the whole body politic, and you cannot justify them on any other grounds. You will say, I know, that this is justifiable on the same grounds, that you organize the producers and it is going to benefit the people as a whole. If that is so, then it is justifiable. But I tell you you are right on the border line, and it is a bad precedent to establish. This is the first reason.

In the second place, because we are continually talking about extravagance in state government and the appropriations that are being made for this or that or the other thing. And yet what are we doing? We are asking the legislature for appropriations for this, that or for the other thing. Where is it going to stop? To ask for \$20,000 to do this specific work I do believe is

not justifiable; first, on principle, and next I believe it is not warranted at this time when there are so many appropriations asked for that are vital. In the next place, I believe you will not get anything out of it. We cannot organize men by legislative fiat. You cannot pass a bill here in Albany appropriating \$20,000 for the organization of the farmers and then send out a lot of men and organize them unless you have something back of it. It seems to me the resolution prior to that covers the ground. It asks for legislative aid in bridging the gap between the producer and the consumer. I am opposed to it if I am the last man here, unless you can convince me I am wrong. I should a great deal rather be right than consistent.

MR. DILLON: I have been connected more or less with agricultural work all my life. I believe I attended the first farmers' institute that was ever organized in this state, and have attended more or less of them since. I have attended the farmers' meetings throughout the state and have heard resolution after resolution offered, and appropriation after appropriation provided for the education of the farmers of this state. For what? To teach them to produce two blades of grass, in the old Dean Swift theory, where they produced only one before. For what purpose? To give the railroads a little more freight to handle; the express companies a little more express to handle; the food speculators and commission merchants a little more produce to handle and a little more opportunity for graft; and, if you will have it so — it does not often work out that way — give the city consumer a cheaper cost of living, and cheaper food. Now, Mr. Jordan told you here last night that the farmers of the South raised a small crop of cotton one year and received some eight million dollars for it, I think. The next year they produced 40 per cent. more and received 30 per cent. less for the bumper crop than they received for the small crop of the year before. Now what good is it to us farmers and producers for the state to go on spending money and educating us to grow bumper crops, to buy fertilizers and hire help, to work ourselves, to work our children and our women on the farms and produce more stuff to send into the markets, and get less for it than we would if we grew only half as much? Now that is the

work that has been, and is being done in this state and throughout this country right straight along during my recollection of thirty years. In Europe they are not doing it that way. They began at the other end. They began by helping the farmer and the producer to get more out of what he was already producing. They are helping him to market the products that he is already producing so that he is getting a living wage out of it. When they help him to do that they know very well that he is going right on to produce more and he will produce just as much as he can at a profit, just like other business men are doing in their lines.

We all know about the difficulties the farmers and producers have in marketing their products in New York City or in other markets, or even in your local markets. You cannot do it, because you have to supply the trade. When I was a young man on the farm a young friend of mine went into the hotel business and I said "George, I want to sell you some stuff." He said, "All right, what can you give me?" I said, "I can give you some strawberries, a few cabbages, and some apples." He said, "John, I am awful sorry, but I cannot do a thing for you." "Why?" "I have people coming here every day and I must have breakfast, dinner and supper. I could not depend on you. If there were twenty-five farmers around here and they were to assemble their products and get them together and were in a position to send me just what I wanted every day I should not go to New York to purchase. You send your stuff to New York and I go down there and buy it and bring it back. It is old and stale, and not as good, and if you had an organization here by which you could supply me regularly I should buy of you." Now, that is the whole thing in a nut-shell as to the local market. The New York market is a different thing.

Now, this is what I should call simply an extension, Mr. van Alstyne, of your educational work and it is the very best kind of educational work that has ever been attempted for the producers of this state, and altogether I should rather that you would come out in your institutes and drop all of your conservation and all of your feeding propositions and your fertilizer propositions and turn your institute work for a whole year into the one proposition of helping the farmer to get a little more out of what he

is producing, and never mind the extra barrels, etc. It is not worth my while to continue this subject, everyone of you understands it and it is time that you did something or other to get a little more money out of what you are producing.

MR. VAN ALSTYNE: I do not want any gentleman here to think I am opposed to the matter of cooperation. Mr. Dillon knows better than that because we have discussed that thing many times. That is not my thought at all. I want to say this to you, that in instructing my institute workers at Geneva last November, one of the things I suggested to them was that I wanted them in every place where possible to push the matter of local cooperation by every means in their power. They are doing it. I said this expenditure was unnecessary. We are asking just at this time for \$25,000 to help the farm bureau movement. That farm bureau movement has come to stay. Someone said in this hall yesterday that we are going wild on this agricultural help extension movement. That is true. Let us look at the matter, is there a better way that we can organize the farmers than by the farm bureau if it is properly managed? In Niagara County they are organizing. Last year they had a crop of peaches far beyond their ability to handle or to get cars for. Why? Because they did not know what they were going to have. The agents of the railroads asked, "How many peaches are you going to have?" and provided rolling stock for that amount. At one little station they shipped more cars the first week than were shipped the entire packing season before. Peaches were selling when I was there in September for eighteen cents a basket and here in Albany for \$1.00 to \$1.35 a basket. Now if that farm bureau had been organized then as it is now, would it not have been a way and the practical thing—you would not need preparation to do it—that man could have gone out and taken a census of the peach crop of Niagara County and when he had gathered these facts, as he could easily have done, could then have gone to the railroad people and they would have provided cars. That same man could have come right here to Albany and marketed carloads of peaches without the help of any organization and without any preparation. Now, these farm bureaus are coming. Let us get somewhere and do some one thing and do

it well; we have agencies enough. The department has organizing men now in the cow testing association work to do that very thing—to make it produce more economically. Do not let us get maudlin in this thing and waste sympathy. I am in favor of doing anything to help the farmer, but I am not in favor of asking for appropriation after appropriation to dissipate our energies when we have agencies enough working already.

MR. TUTTLE: I am going to give you two or three concrete illustrations to show our helplessness. “Ezra Tuttle and his lima beans” has gone all over this country because of an illustration I happened to give at the conference in New York in December on this subject of cooperation. It has gone into all the papers and has not been treated with ridicule but has been treated as pointing to a fact. I said that our lima beans were selling at forty cents a bushel and just at that same time I went into the Washington Market and priced lima beans, and at every stall they were selling them at fifteen cents a quart, or \$4.80 a bushel. Now, how could I help myself. The trouble of this thing is that we do not look at it directly and closely enough. I had thirteen acres of lima beans and I was tempted to make a demonstration, to sell those beans from a cart or a van in New York City, but I knew that the dealers would concentrate against me. I should have had to take out a license with that system. We want a system radically different from the present system and we can only get that by organization. A neighbor of mine this year sent 100 barrels of cauliflower and seven bags of lima beans to New York and received a check for \$15.00, just enough to pay for 100 second-hand slat barrels from Virginia. Another neighbor told me he sent seven barrels of cauliflower and received a return from his commission man that they did not bring enough to pay charges and asking him to send \$1.62 to balance. I am within seventy miles of the market; but were I within seven feet of it I could not help myself. You cannot get to the individual, you have to go through this abominable system of middlemen. What we need is organization all along the line. If we producers and consumers had a distributing agency to handle our own business we could be master of our own business. Do not look at it as some far off and tremendous problem. This is something that

means something and it does not mean class legislation. It means something for the producers and the consumers of this state and that is every man, woman and child in the state, and is not class legislation. Let us have some legislation and some appropriation which means a benefit to the people of this state. And why do we ask legislation? Simply because we cannot do it individually. You try it and see if you can.

On motion the resolution was adopted.

MR. PALEN: WHEREAS, Every business in this country, except the business of the farm, has a financial system adapted to its peculiar needs, and

WHEREAS, A farm cooperative bank system is in successful operation in practically all of the European countries, under state laws, state inspection and state control,

Therefore be it Resolved, By the members of the New York State Agricultural Society in convention assembled, that it is the sense of our people that laws should be effected and put on our statute books enabling the organization of State Cooperative Mortgage Banks, for the purpose of financing mortgages on farm property in the State of New York, and for the encouragement of drainage and improvement of farm property, and be it further

Resolved, That our Legislative Committee be hereby instructed to assist in the preparation, and to encourage and urge the passage of such laws during the present session of our state legislature.

The adoption of this resolution is recommended by this committee.

MR. SCHRIVER: I do not appreciate the first proposition — that all other classes of people have banks and the farmers have none. I do not appreciate the general trend of things that have been going on here from beginning to end, that the farmers have nothing and everyone else has everything. I believe that if you were to look into the savings banks of the State of New York, you would find that the farmers have as large a ratio of deposits in these banks as any other class of people in this state. That is my judgment about it. I do not believe that we are paupers or

exactly on the way to become paupers. I am a farmer because I like the business, because I enjoy the situation and the opportunity, and I believe that as a class the farmers are as good as any class, perhaps a little better. If you want citizens in an emergency, soldiers in a war, you will go to the farmers to get them. Forty-eight per cent. of the Civil War soldiers were farmers' sons. We do not want any class banks. I do not believe there is any dearth of opportunity for the man who has assets and collateral to borrow money. I believe there is no condition that can be devised or improved that will allow a man who has no assets of any kind that are valuable to borrow money. No one is going to get something for nothing. I do not believe there is any demand on the part of the farmers, at least I have not heard of any. It seems to be an infection, a veritable contagion, to go in for farmers' banks and for the helping of the farmer. Now, I believe that the American farmer is abundantly able to help himself. He has an individuality, an independence and a sense of proprietorship that is not experienced in many other occupations or kinds of business.

I am diametrically opposed to the suggestion of having banks specifically for farmers. We have all the banks we ought to have, even if they do in forty years make eighty million on a capital of five hundred thousand dollars. I am opposed to the proposition because I do not think the farmers want it, they have not been consulted about it.

MR. PALEN: I think Mr. Schriver did not understand the resolution exactly as it is put here. The proposition is: "Whereas every business in this country, except the business of the farmer, adapted to its financial needs—" Now, it is a fact that Mr. Schriver must know that the national banking system absolutely prohibits loaning farmers any money on a mortgage on the farm. Furthermore, the savings banks during the period of agricultural depression in this state—nearly every board of directors of savings banks in New York passed resolutions not to loan money on farms. I had a friend who sold a farm within four miles of the Court House in the City of Poughkeepsie, of ninety-seven acres splendid land, for \$7,000 with more than that buildings on it. He took as a part of the purchase price a mortgage from a

very responsible party in New York City, and do you think the savings bank in Poughkeepsie would take that mortgage? No, sir. One of the members of the finance committee said we are in a very inconsistent position relative to our procedure in these matters. A large percentage of the sixteen millions in this savings bank is farmers' money, and we will not loan money to farmers. That man wanted to buy another farm and he needed the money. He had made a purchase contract to take the farm and needed the money, so he said to me can you find someone here who would take this mortgage. I started out to do it and went to the treasurer of the savings bank first. He said, "Make an application for a loan and that will bring it before our finance committee and we will act on it." I went to all the stores I could think of, and had Mr. Sague's advice as well and the only thing I could do was to get a broker there to offer to find a purchaser for this mortgage by giving a 2 per cent. brokerage fee of \$70. Now, that is because we lack a financial system adapted to the farmers' need.

MR. DILLON: I have heard a great deal of discussion one time and another on this financial proposition and I have heard no discussion yet that was so convincing to me in the need of a system of this kind as was given by Mr. Schriver in opposition to the proposition. If it has come to pass that the farmers have money on deposit in the savings banks — and I know they have — and that that money cannot be used to finance the farm but that it does go to finance anything else that comes along and the surplus goes down to New York to speculate with in Wall Street and to create artificial value for stocks, paper certificates there that have no value in themselves, then I think it is nearly time that we have the machinery or instrumentalities by which we could accumulate that money in our own centers, near our homes, and in exchange for that money give to the holders of it and the owners of it and the men and the women who have worked all their lives to save it — just give them a little return for it, let them buy the debentures and put them away and make them as safe and as sound as the best government bond you can possibly print. Now that is all there is of this. We are not bringing this as a cloak to throw over some one, and we are not bringing it

here for those who have all the banking facilities and all the credit they want. We are bringing it here so that you may help us create machinery by which the men that do not have all the money and all the credit they want but who do have property, can standardize or liquidize that property, and use it for productive purposes. That is what we are asking, we are not driving anybody into it.

MR. SCHRIVER: I can tell Mr. Dillon the reason why it would not be prudent or safe for banks to take farm mortgages. Within five miles of where we are sitting and standing, in a community of farms where thirty years ago you could not buy a farm for less than twenty to thirty thousand dollars, they are now selling them for four and five thousand dollars and glad to sell them at that. It is that depreciation of farm values which you cannot guarantee a bank against, that would make it absolutely imprudent for a bank to take that kind of security.

On motion the resolution was adopted.

MR. PALEN: *Resolved*, That the New York State Agricultural Society hereby extends its thanks to all who have contributed to the excellent program of this meeting, and particularly to Mr. Harvie Jordan, of Atlanta, Georgia, and Professor E. W. Kemmerer, of Princeton University, whose valuable contributions to our program added so much of interest and information to our deliberations.

On motion the resolution was adopted.

MR. PALEN: *Resolved*, That the New York State Agricultural Society hereby expresses its sincere thanks to the press for its excellent reports of the proceedings of the society during this meeting.

On motion the resolution was adopted.

MR. PALEN: *Resolved*, That the New York State Agricultural Society hereby expresses its thanks to the State Department of Education and to the Superintendent of Public Buildings, for

the use of the splendid new auditorium in the Education Building for holding the sessions of its seventy-third annual meeting.

On motion the resolution was adopted.

MR. PALEN: *Resolved*, That the members of the New York State Agricultural Society hereby express their earnest appreciation of the faithful and efficient services rendered by the retiring officers of the society.

On motion the resolution was adopted.

MR. PALEN: *Resolved*, That the New York State Agricultural Society hereby tenders its thanks to our worthy Commissioner of Agriculture for his valuable assistance in promoting the interest and success of this meeting.

On motion the resolution was adopted.

MR. PALEN: *Resolved*, That a copy of these resolutions be included in the minutes of this meeting of the New York State Agricultural Society.

On motion the resolution was adopted.

THE PRESIDENT: We have adopted these resolutions seriatim.

On motion the resolutions were adopted as a whole.

MR. PALEN: Two references to the committee are returned with explanations. One is a resolution relative to changing immediately the parcel post law which has just gone into effect. Your committee after some discussion thought it was a little early to attempt this. So this resolution was not favorably reported.

Another matter was the report of the Committee on Agricultural Resources. Some of you heard the remarks made by one member of this committee, Mr. Wadsworth, relative to the rather mixed condition as to the hydra-headed character of the efforts being made to promote the development of agricultural resources. For that reason the committee thought best to bring the report

back to the society for action — the report submitted by Mr. van Alstyne. (The report was read by Mr. Palen.)

THE PRESIDENT: You will remember that this report, because it contained certain resolutions, was referred to the resolutions committee to be brought to us this morning at our business session. Now this is a very important report of one of our most important committees. We have taken no action on it as yet. It is before us as a whole.

On motion the report of the Committee on Development of Agricultural Resources was adopted.

THE PRESIDENT: We will now listen to the report of the Committee on Nominations.

MR. SESSIONS: It has seemed to us that the officers during the past year have done such good work that they should be continued. So the Committee on Nominations, while they realize that their report does not bind members of this organization in any way, recommend the following:

OFFICERS FOR 1913

President

George W. Sisson, Jr., Potsdam.

Vice-Presidents

First District, John J. Dillon, New York.

Second District, Ezra A. Tuttle, Eastport.

Third District, Gilbert M. Tucker, Albany.

Fourth District, C. Fred Boshart, Lowville.

Fifth District, Wing R. Smith, Syracuse.

Sixth District, O. U. Kellogg, Cortland.

Seventh District, Samuel Fraser, Geneseo.

Eighth District, F. N. Godfrey, Olean.

Ninth District, Dr. G. H. Davison, Millbrook

Secretary

A. E. Brown, Batavia.

Treasurer

Harry B. Winters, Albany.

Executive Committee

A. Denniston, Washingtonville.

J. A. D. S. Findlay, Salisbury Mills.

E. H. Chapman, 1 Madison avenue, New York.

Dr. Thos. E. Finegan, Albany.

Franklin D. Roosevelt, Poughkeepsie.

Edward van Alstyne, Kinderhook.

W. W. Ware, Batavia.

T. B. Wilson, Hall.

F. W. Sessions, Utica.

On motion the Secretary was directed to cast one ballot for the list of names as read for officers for the ensuing year, and this was done.

THE PRESIDENT: I have a suggestion from Senator Roosevelt. He would like us to ask our Legislative Committee to consider the advisability of a bill for sending one copy of all reports and bulletins of the Agricultural Department and the Conservation Commission to all granges and agricultural societies in this state. I shall refer this to our Legislative Committee.

There is one other matter that should have some attention. We have had very forcibly brought before us the fact that there is too little coherence among the many societies, all acting in good faith in the interest of agriculture in this state. We have many meetings scattered over the state at a great expenditure of time, money and energy. Cannot we do something practical to federate these associations so that it will be possible for the individual to attend more of these meetings than he can under present conditions? I suggested in my annual message that this society appoint a conference committee that would take it up vigorously with like committees from other societies. Let them get together and have a little convention of their own and arrange for a series of meetings properly scheduled so that each would have a fair chance and still give us opportunity to attend more of them than we do, and let them get in touch with the broader work of this society. I made

that only as a suggestion. I have no specific authority from you to appoint a conference committee.

MR. TUTTLE: It has been suggested by several gentlemen in conversation that it would be a very workable arrangement if we could get these various societies to meet here in Albany the same week, not as last year on the same days and hours of the day, because it was said that the greater prominence of the agricultural society rather overshadowed the meetings of the other societies. They did not have the attendance they deserved, nor the time for deliberation. If that could be obviated; if we could have a sort of an agricultural week in Albany and have two days devoted to the Agricultural Society meetings and one day, if a day is sufficient, to other societies—not on the same day or the same hours of the same day, but on other days, it would result in the congregation here in Albany of people belonging to all of those different societies during the larger part of that week. Then both we and they would have a larger attendance and the interest would be increased. With a view to having that matter considered, I move you that the chair appoint a conference committee consisting of three members of this society to confer with other committees if they be appointed by other societies.

VOICE: I consider that an excellent idea. I am here today and I should like to attend two other meetings. I shall try to get to one of them. Of course, I do not know whether the gentleman has reference just to the associations that have been meeting here in the last two or three days. Other associations in the state are interfering. The New York State Fruit Growers' Association has members here whom I know ought to be at their meeting.

MR. SCHRIVER: I am interested in the success of all kinds of agriculture in the State of New York. I am here as a delegate from the Orange County Agricultural Society, as well as a member of this society. I am anxious that the several societies of the county should somehow so far unify as to be able to cooperate. We are talking about cooperation in all lines. It seems to me it would be proper for those local societies to have representatives in this body in some way to aggregate all the agricultural interests and forces somewhere at the same time. I know of no better center than this and I should like very much to have some ar-

rangement made so that these local societies can be officially and properly identified with this society.

THE PRESIDENT: The suggestion is a vital one. It is true that the officers of these societies over the state are ex-officio members of this society, and we want to federate them.

On motion the president was authorized to appoint a conference committee of three members to take up with other societies the question of federation.

MR. TUTTLE: I move you that the president of this society be added to that committee. Motion carried.

(Mr. Sisson stated that he would announce the committee later.)

THE PRESIDENT: In closing, I desire to thank one and all who have taken the time to attend this convention. I know what it has meant to some of you. I know how much hard work some of the men have put upon this meeting. I also know, as has been very clearly brought out, that the interest in this general movement is not what it should be and it will devolve upon each and every member of this society scattered as they are all over New York, to get in personal touch with his neighbor whom he knows needs to be brought into touch with the sort of work we are endeavoring to do. The New York State Agricultural Society is a great public service commission. We are doing altruistic work; it is unselfish work and we should like to see some appreciation on the part of the great agricultural body in this state of the work we are endeavoring to do in this unselfish, unpaid, hard-working way. But still we are gratified if we have some success. That is the best gratification. So, again thanking you, I declare this convention adjourned.

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STATE OF NEW YORK
DEPARTMENT OF AGRICULTURE

CALVIN J. HUSON, *Commissioner*

Bulletin 48

Fruit Production in New York

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FRUIT PRODUCTION IN NEW YORK

INTRODUCTION

Fruit growing at the present time is receiving more attention than perhaps any other form of agricultural production. Thousands of questions are asked relative to every phase of the subject and many earnest queries come from persons who have but little conception of the nature of the business and who seem to have an impression that a small investment will soon or ultimately produce a large income. Persons without experience should not enter upon commercial fruit growing on a large scale. It takes time to rear an orchard to bearing age and from the start trees must have attention. Chances of full success are favorable only when every favorable factor prevails.

The essentials to profitable fruit growing are many — the lack or neglect of even one may prove fatal to the enterprise. Of the leading commercial fruit growers in the State not one achieved his record by chance but by intelligent application of the principles involved and hard work.

SOME ESSENTIALS

First, and perhaps most important is the personal factor. Trees seem to do their best for those who love them. Attention is given to objects of love. Attention, application, persistency, business ability, observation and integrity of purpose are all fundamental.

Second. Location should be in that portion of a fruit producing area where trees of a desired species seem to thrive naturally. Apples grow in nearly all counties of the State but attain greatest commercial importance near the lakes and in the large river valleys. Peaches do best near large bodies of water as in Niagara county, along the Hudson and on Long Island. "Sweet" cherries in peach sections and "sour" cherries wherever apples thrive. Grapes near Lakes Erie and Ontario, the finger lakes and the Hudson river.

Third. Small fruits can be grown in most portions of the State where soil can be cultivated and is rich enough to grow anything.

Fourth. The selection of varieties is important. They must be not only such as are suitable to supply the markets, but they must be adapted to the location, elevation, soil or environment to secure best results. The Baldwin apple will fail in certain "cold" sections where the Wealthy or Oldenberg varieties will succeed. Clapps pear will thrive where the Bartlett will winter kill; and in a like manner there is much to learn relative to the adaptation of both species and varieties. Much information on this subject is available and is a matter of common knowledge among the fruit growers.

Fifth. Following fall or spring planting, as the case may be, suitable cultivation should be given to promote the growth of the young trees. They must be protected from the attacks of mice and rabbits in the winter, and throughout the growing season every year they must be properly sprayed with suitable solutions to destroy various insect pests, and to prevent the attacks of destructive or injurious fungous diseases. The Department has issued bulletins on these subjects and practically every hindrance to full development of the trees is subject to control. When the trees come into bearing special attention should be given to the spray operations if success is to be attained. The larva of the moth which is the principal cause of wormy apples is subject to control if spraying is done at the right time. The leaf eating caterpillars, such as have been so abundant this spring, are very easily destroyed if trees are sprayed according to the formulas given by the Department. It is gratifying to know that notwithstanding the great outbreak of the apple tent-caterpillar this year, those who have followed the directions issued by the Department early in the season have entirely succeeded in saving the foliage on their trees. Those who failed to carry out the instructions for spraying with two pounds of arsenate of lead to fifty gallons of water as soon as the growth began, have in many instances over a wide portion of the State, lost all the foliage on their trees. This will not only result in the loss of fruit this year but has already prevented the formation of fruit buds for next year's crop. In the month of May a notice was sent out to six hundred papers in the State advising orchardists to spray in season. If this had been generally done, the Department would

not now be receiving notes or letters complaining about this apple worm. It is too late now to do anything, but there is abundance of time to get ready for operations next spring.

Sixth. When the fruit is ready to market good business judgment will be required. Only such fruit as is in good condition should be sent to market. All fruit should be carefully picked; very carefully graded, cautiously packed in legal sized containers of full measure and placed upon the market in good season. Advance arrangements should be made with the commission or other wholesale merchants, and it is advised that every grower should have a characteristic label giving his name, the name of his fruit farm, and the package might be accompanied by a guarantee that the fruit is all as represented. In this way it will become known that fruit packages bearing a certain mark or label may be relied upon to be as good or better than is represented.

There are a few fruit growers in the State who occupy all their land with fruit. Since they have grown up in the business they are successful; but as a rule this course is not recommended. Fruit growing in conjunction with other agricultural products is, however, to be highly favored. It is known that on many of the farms of the State a little orchard of five or ten acres is the most profitable portion of the farm. An average farm of one hundred acres has upon it a few acres suitable for the planting of the apple, pear, plum or cherry orchard or there may be a few acres especially adapted to the growing of currants or berries, from which the profits in connection with the farm work would prove to be considerable. Therefore, it is strictly advised that all persons who have farms should study this question of planting out a variety of fruit for the purpose of enhancing their income. Fruit growing has great charms for the amateur, and even the commercial fruit growers can get a great deal of satisfaction in growing the choicest varieties of fruits on a moderate scale. While in commercial orchards a dozen varieties of apples would be considered too large, yet there are thirty or more varieties that could be raised to advantage in a small way. Five varieties of pears are enough for most commercial orchards yet there are twenty or more varieties of pears worth growing — so it is with all other species of fruit.

Fruit growing in the State of New York has assumed such large proportions and has been pursued so long that it is away beyond the experimental stage. There is no State where conditions are more favorable or where the industry is so firmly established. Soil, climate and proximity to the best markets of the world are ours and it only remains for growers to apply their knowledge to succeed.

The value of all fruit produced in the State of New York according to the last census is as follows: \$24,826,066.

Apples	\$13,343,028
Peach	2,014,088
Pear	1,418,218
Plum	519,192
Cherry	544,508
Apri cot and nectarine	14,490
Quince	135,345
<hr/>	
Total value of orchard fruits.	\$17,988,894
Value of small fruits	2,875,495
Value of grapes	3,961,677
<hr/>	
	\$24,826,066
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The value of all fruit produced in New York State exceeds the value of the tropical and sub-tropical fruits produced in the United States by \$2,114,618.

New York has a total of 24,988,707 orchard trees which produce 29,456,291 bushels, valued at \$17,988,894.

New York ranks third exceeded by California and Missonri in number of trees.

New York ranks second in bushels of fruit produced exceeded by California by about 2,045,216 bushels, because of their immense prune industry.

New York has 14,076,718 apple trees which produce 25,409,-324 bushels valued at \$13,343,028.

New York ranks first in the value of apples; first in bushels produced and second in number of trees. Missouri ranks first

in the number of trees with 17,984,506, but with a production of 9,968,977 bushels.

New York has 3,644,257 pear trees which produce 1,343,089 bushels valued at \$1,418,218.

New York ranks first in the number of trees; second in the quantity and value produced, closely following California in this respect.

New York ranks third in value of peaches produced, about equal to Georgia and less than half the value produced in California.

New York ranks third in the value of plums and prunes producing \$519,192; Washington producing \$600,503 and California, with its enormous prune industry, producing \$5,443,539.

New York has 309,734 quince trees which produce 132,451 bushels valued at \$135,345.

New York ranks first as it produces about one-fourth of the quinces raised in the United States.

New York has 35,603,897 grape vines in vineyards which produce 253,006,361 pounds, valued at \$3,961,677.

New York ranks second in number, production and value of vines, while California ranks first with a production of \$10,-846,812.

New York produced \$2,867,673 in flowers and plants, thus ranking first.

New York produced \$2,750,957 in nursery products, thus placing it in first rank.

New York has 22,496 acres in small fruits producing 37,857,-829 quarts, ranking second, but closely following New Jersey which is first in small fruits.

New York ranks first with 11,057 acres in raspberries, and first in currants with 2,557 acres.

The following was furnished by this Department for the "Arbor Day Annual" issued by the Education Department in 1912.

FRUIT PRODUCTION IN NEW YORK

Almost as soon as the early settlers of America were established on these shores, they began the propagation of those fruits best known to them in their homes beyond the seas. As those

who followed in the wake of Cæsar's invasion of Britain carried with them the best of the old Roman varieties of fruits, so did the immigrants from Great Britain bring to America the seeds and cions of those Roman varieties transplanted into the mother country eighteen centuries before. These cions brought from Europe were grafted upon the native fruit trees, and from that day to this the careful selection and propagation of the fruits common to the temperate zone have gone forward, and with each migration of settlers cuttings and seeds of favorite fruits have traveled west and north until every section of North America is dotted with orchards, the products of which form one of the greatest sources of the nation's food supply.

The apple, the pear, the plum, the cherry and the grape were those fruits which at first received the attention of the newly arrived colonists, but the smaller fruits—the strawberry, the raspberry, the blackberry and the currant, not as we know them to-day but some of their prototypes—were already here awaiting the arrival of the first settlers.

The apple seems to have been primarily cultivated by New England folk for the manufacture of cider, for as early as 1639 one man is reported as having five hundred barrels of cider, and in 1726 a village near Boston produced ten thousand barrels of cider.

Wonderful improvement of varieties and extensive plantings the whole country over, especially in this State, have served to bring the value of the fruit yield of the United States up to the enormous amount of \$131,423,517 annually, of which New York's contribution was 12.1 per cent.,* or more than \$15,000,000.

Were it not for the subtropical fruit crop of California, New York, the Empire State, would be the empire state in fruit production, leading all others in amount and value of the product.

New York ranks among the states of the Union: *first* in the production of apples and small fruits; *second* in grapes and pears; *third* in plums; and *fourth* in cherries.

Chautauqua county alone produces more value in grapes than any state except California. Niagara and Monroe counties pro-

* Census of 1900.

duce over one-half the peaches in the State. One-fifth of the plums and prunes are grown in Niagara county, and Columbia county is the leading cherry-growing county of the State. The counties of the Hudson valley produce about one-fifth the entire fruit crop of the State.

Fruit grown in the State of New York is of the very highest quality. The market or commercial essentials of fruit are shipping and keeping properties. For this purpose fruit must be of sufficiently firm texture to bear with as little injury as possible the packing and handling incident to transporting to market and distribution to consumers. Commercial fruit growers must therefore grow such varieties of a given kind of fruit as will meet the mentioned requirements, but they will at the same time choose types having as bright color, uniform size, attractive appearance and good eating quality as the necessity of conforming to marketing and handling requirements will permit. It is, however, a fact that most consumers of fruit rarely taste or even know that certain very sweet, rich and delicious fruit can not be found in the general markets. Peaches, plums, grapes and strawberries reach their highest state of excellence only when fully ripened on the trees or vines and when in this condition they are too tender to pack and ship.

There are scores of varieties of nearly all kinds of fruit possessing superior quality that can not be sent to a distant market, yet they are highly appreciated if grown in the home grounds for table use or nearby consumption. Growers are willing to send better fruits to the markets and much improvement in this direction has been shown in the past few years. Better methods of packing in improved crates, boxes and baskets, better fruit to pack and better rapid transportation and refrigeration are the order of the day. Fruit growers of the State of New York in many ways hold the key to the situation. They are within a day's trip by freight or a night's by express to over one-half of the population of the United States, thus giving them access to the largest and richest ultimate consumers in the world. They have an advantage in freight rates alone of nearly one dollar a box over their Pacific coast competitors who have possessed the eastern markets with their attractively packed apples, pears,

cherries, prunes and grapes. The demand for higher quality, choice and fine-textured fruit has opened a new field for the attention of New York State fruit growers and they are rising rapidly to the opportunity presented to them.

One hundred years ago the most of the apple crop was made into cider, pears into perry, cherries and peaches into brandy, and grapes into wine. Little ripe or green fruit was consumed, but now fresh fruit is used by every family and many families have it every day of the year.

Land in New York State suitable for growing a great variety of fruit is found in abundance and at exceedingly attractive prices. These advantages are largely enhanced because of quick communication. School and other educational privileges prevail with little or no cost. Any crop that can be raised in the northern temperate zone can and is produced in this State as cheaply and profitably, and in many cases more so, than in any section of the United States.

Demonstrations by our experts in horticulture, our entomologists, our pathologists and our chemists have proved that nine-tenths of the hindrances to the production of fruit crops are controllable. The life histories of pernicious insects have been carefully worked out and the fungi have been closely studied by our best men who have had advantages of the German universities in this science. The skill of the chemist has supplied technical knowledge of use in the manufacture of insecticides, fungicides and fertilizers. Competent horticulturists have been given ample opportunity to experiment in orchard management. Commercial manufacturers of spraying material and appliances for spraying have vied with each other in placing on the market suitable tools for the requirements of the up-to-date fruit grower.

Spraying has become a necessity in fruit growing and is essential to profitable results; no one should overlook its importance if contemplating an extensive planting of any kind of fruit trees or plants. Comprehensive bulletins giving information on the subjects of what to spray for, when and how to do it, are available. The State Department of Agriculture has for distribution several bulletins and circulars on fruit growing and other agricultural subjects.

Laws for the protection of fruit growers in the State of New York have been passed and are enforceible by the Department of Agriculture. Nurserymen can not ship any nursery stock unless they have attached to each package a copy of a valid certificate of inspection issued to them by the Commissioner of Agriculture of the State. The inspection of the nurseries in the State involves almost the constant attention of a large number of inspectors. Over 550 certificates were issued in 1911 on nurseries embracing 9,121 acres of land and containing nearly 100,000,000 trees and plants.

The nurserymen of the State are not growing an excess over their annual average for the past few years, but last year's reports show the amount growing as follows:

14,000,000 apple,	1,170,000 apricot,
7,800,000 pear,	7,000,000 currant,
8,600,000 plum,	16,000,000 grape vines,
10,700,000 cherry,	20 acres of small fruits and
9,000,000 peach,	millions of ornamental
1,500,000 quince,	trees and shrubs.

Importers and those who bring nursery stock into the State report the facts to the Commissioner of Agriculture who causes inspection to be made at the point of destination. No nursery stock can be planted or distributed until authority is given. This authority is withheld until inspectors report apparent freedom from insect pests or fungous diseases. The importance of this requirement of the law is shown by the results in the past three years during which time an annual average of 10,000 shipments, embracing 30,000 boxes and packages and containing over 17,000,000 trees and plants, have been carefully inspected at points of destination within the State. In the past three years, 31,414 trees were found infected with San José scale and were destroyed or reshipped out of the State; 10,972 nests of brown-tail moths containing an average of 300 live caterpillars, and 43 egg masses of gipsy moth were discovered and burned. Several shipments were received from abroad containing pine trees infected by blister rust.

The fact that gipsy brown-tail moths and blister rust are not

established in the State has caused special care to be exercised to see that they are not brought here. The nests of brown-tail moths brought into the State principally in seedling stock from France, gipsy moth eggs from Belgium, and the pine rust from Germany in such large numbers, together with a hundred or more shipments from the New England States where both insect pests are established, show how infestations might have become established at hundreds of widely separated localities in the State, but for the work of the inspectors. These two pests have already cost the New England States over \$7,000,000 in control measures alone, not estimating damages. Our efforts have not been confined to inspection of incoming nursery stock but the entire eastern State boundary line has been scouted for years. All highways leading from the infested sections of New England into this State have been carefully inspected over a wide area. All trees from eastern Massachusetts planted in the State in the past ten years that could be found have been examined with the result that it is believed that not a colony of either gipsy or brown-tail moth is in the borders of the State at this time. Twenty thousand colored plates of these pests have been distributed principally in the eastern part of New York, so it is believed several thousand persons are watchful and that any of them would report to the Department of Agriculture if suspicious specimens were discovered to the end that the colony might be at once destroyed. It will cost less to keep them out than to control them after they once get a foothold in our orchards or forests.

Several years ago the Department of Agriculture, in order to avoid the burning of orchard trees infested with San José scale and the damage caused by the then widespread use of oils, promulgated a formula of lime-sulfur salt. The good results which have followed the scientific preparation of the lime-sulfur solution and its general use at the present time as an insecticide as well as a fungicide have proved the wisdom of the adoption of a specific that could be made and applied chiefly by the orchardists themselves. Manufacturers and dealers in insecticides and fungicides for the use of fruit growers are required to secure from the Department of Agriculture a license to do business in the State and also to label the commodity plainly showing the percentage

of ingredients. Since this law went into effect the quality of these commodities has been greatly improved.

Having referred to the amount of fruit production in New York and the State's rank in the nation, and having discussed briefly the advantages of the State for fruit growing and the protection afforded the fruit grower by proper statutes, it might prove interesting if more space were available to look into the evolution of the industry and the origin of the important kinds of fruit growing.

The pear is of remote antiquity. It grows wild in Great Britain and on the continent and varieties have been brought from Austria, Japan and China. The plum has been cultivated from ancient times and is found in both a wild and cultivated state in many parts of the globe. Our most useful varieties are from England and Japan. The cherry was brought to Italy in the first century from Asia and is now widely distributed. It ripens in Norway as far north as latitude 63 degrees and in Germany the public roads for miles are lined by the trees. The grape has a record dating back to earliest history and methods of culture were mentioned by the most ancient authors. More has been written of the grape and its products than of any other fruit. Naturally so, because in so many countries it is the principal base of food and is useful in such a great variety of ways.

The apple also has mention in early history. The Romans had twenty-two fine varieties and wealthy people vied with each other in producing the finest specimens. It is supposed that some of these old Roman varieties were carried by the armies of Caesar in his invasion of Britain, and now it is grown in most parts of the north temperate zone.

The value of the apple as an adjunct to our food supply is fully recognized and the income to the growers of the State is rarely less than \$12,000,000 or \$15,000,000. New York has produced for many years from 14 to 16 per cent. of the entire crop of apples in the United States. In 1911, it produced over 2,000,000 barrels more than all of the New England States, 2,000,000 more than the Central Western States, over 2,000,000 more than the Southern States and nearly 2,000,000 more than the highly exploited crops of Colorado, Idaho, Utah, Montana, California,

Oregon and Washington combined. Six counties* in this State produce more apples than any State in the Union except Pennsylvania.

In March, 1911, there were in storage in western New York over 500,000 barrels of apples, a quantity greater than was produced the same year in seventeen apple-growing States.

New York has always led in apple production. The crop here is more reliable than elsewhere. Soil and climatic conditions are unsurpassed. There is scarcely a successful orchard in the State from which one may not see a dozen sites suitable for planting. There is opportunity for great expansion in the production of apple culture if it is deemed wise to do so.

In closing I suggest that the school children of New York plant on each recurring Arbor Day at least one apple or other useful fruit tree, and thereafter give its growth and development their personal care and attention.

CALVIN J. HUSON,

Commissioner of Agriculture.

The following was written by Professor Hedrick of Geneva and copied from the "Arbor Day Annual" on

ORCHARD MANAGEMENT

The management of an orchard is not a matter to be settled by one man for another. To do so is quite as impossible as it is to tell a man how to manage a business enterprise, a clergyman how to preach, a teacher how to teach, or a lawyer how to win cases. But some methods are common to all business: there are fundamentals in theology, teaching is based on pedagogy, and every lawyer must know something of Blackstone. So, too, there are generalities which apply to fruit growing. The better a man can ground himself in these, the more successful he ought to be in growing fruit. The word "generalities" is used in preference to "principles" and "fundamentals;" these imply that fruit growing is a science, which it is not, but an art to which a number of sciences contribute. It is well to understand this at the outset that in a discussion of orchards the principles and formulas of an exact science may not be expected.

* Monroe, Niagara, Wayne, Orleans, Dutchess, Ontario.

Let us approach our subject by outlining the ground to be covered. The fruits of this climate fall into three classes: tree fruits, vine fruits, and small fruits. Orchards are plantations of any of these but we restrict the term in this discussion, as in common parlance, to plantations of tree fruits. To classify still further, orchards are planted with two general objects in view, namely, to produce fruits for home use and for the market. Again commercial fruit growing is divided into that for a special market and that for the general market. Necessary brevity forbids specific discussion of these three divisions of orcharding but the fruit grower must not lump them in this rough and ready way. The ideals for each are distinct and the methods that succeed in one division may not succeed in another. The very first question for the fruit grower to settle is as to whether he is to grow for home use, a special market or the general market. Upon this decision largely rests the choice of location and the choice and number of fruits and of their varieties.

Still another division may be made. One may choose to grow fruit extensively or intensively. In the first case the orchard is the unit; in the second, the tree. Most of the orcharding in America is extensive. Everything is done on a large scale. There are many acres; few varieties; uniformity of method for all varieties; wholesale packing and handling; and satisfaction with a low price. In Europe fruit growing is intensive. Orchards are small; there are many varieties; special conditions and treatment are given each variety; individual trees are carefully trained, pruned and fertilized; the product is packed with all of the niceties known to the trade and sells for a high price. America will long continue to grow fruit extensively and conditions are such that it is far best she should, but her fruit growers can learn much from the intensive methods of the European fruit growers, especially in the matter of looking more carefully after the individual needs of trees.

Whatever the kind of fruit growing, the choice of place upon which to grow it demands exceedingly careful attention. All subsequent efforts will fail if a mistake is made in choosing the site for operations. In growing fruit for the market economic considerations, such as distance to market, means of transportation,

labor, storage, competition, disposition of by-products, cost of production and overproduction demand much attention. Any of these may prove a determinant of success. "The weakest goes to the wall" applies in growing fruit as well as in other business enterprises. In home orchards these economic factors may be ignored. There are, however, certain natural factors which must be observed in fruit growing for both home and market.

The first of these is latitude, which largely determines the annual temperature, the amount and intensity of sunlight, and the length of the growing season. One must select fruits, and even more particularly varieties, with reference to latitude and its equivalent, altitude. It is easy enough to select fruits for a region in a certain altitude or latitude but it is far from easy to choose the varieties of a particular fruit. Thus the Ben Davis, winesap, romanite and York imperial apples belong in southern latitudes. The Concord grape and its seventy or more offspring belong to the North. So with nearly all varieties of our fruits; they are either northerners or southerners and should be kept where they belong. Still the metes and bounds of latitude may be set aside by such local modifications as hills, valleys, bodies of water, winds and sunshine. Fortunate is the man who has his orchards planted only with sorts suited to his latitude. Climate is the fruit grower's greatest asset and costs him nothing.

As with all crops, the soil must largely determine the value of a location for a fruit plantation and in choosing land all the characters, as physical structure, richness, power to retain moisture and depth must be well considered. Special fruits have special soil adaptations: the peach grows on sand; the plum on clay; apples and pears on loams. But the knowledge that the several fruits have adaptations to soils is far from sufficient. A man planting an orchard should know that each individual variety of any fruit will do better in some soils than in others. The chemist and the soil physicist can help but little here; in most cases an actual test in the field is the only way of knowing whether a variety will or will not thrive in a soil. One property of the soil is too often neglected, namely, its heat-retaining properties. Some fruits, as the peach and the grape, require warm soils; apples and pears will thrive in cooler lands, but in general a cold, heavy, close soil is poor for any fruit.

With the location and land selected the next question is, "What varieties shall I plant?" This question has been touched upon in part in previous paragraphs and it only remains here to be said that out of the thousands of varieties of the several fruits even the few best ones may be most readily characterized by their faults, showing how necessary it is to make careful choice of varieties. An intimate first-hand knowledge of varieties in his own locality is the only way by which a man can become competent to choose the sorts to plant. Look a little askance at novelties. An unbridled passion for "new creations" has been the downfall of many orchards.

It is about as difficult to select the trees of the several fruits as it is to make a choice of varieties. It is not of prime importance but it is true and therefore worth noticing that trees grown near home are somewhat better than those brought from a distance. It is necessary in buying trees to see that they are true to name, free from pests and that they still have the breath of life. It would seem that only the simple would need to be told this. But there is scarcely a fruit grower the country over, big or little, who has not suffered at the hands of some unscrupulous tree dealer in substituted varieties, through the introduction of some pest, or through buying dead or worthless trees.

Unfortunately few who plant fruits concern themselves with the kind of stocks their trees are grafted upon; yet this is a most important matter. Fruit trees are not grown on their own roots but are budded or grafted on those of some other of their kind to get more uniform and more vigorous trees.

After the trees are on hand the vexed problem arises as to how the orchard is to be laid out — whether in squares, quincunxes, hexagons, with or without fillers, and as to distances apart. Only generalities can be given here. The first is that a system of squares is usually best because it permits orchard operations to be carried on most readily. Both roots and branches will utilize all the space. Second, fillers of fruits other than varieties of the species composing the permanent trees greatly complicate orchard operations and under treatment meant primarily for the permanent trees, usually fail. Fillers of quick-bearing varieties of the same fruit, especially of the apple, may often be used to advantage.

There should be as many "outside rows" as possible. That is, the trees should be far enough apart for each to develop in full its individuality, for every fruit grower knows that the trees on the outside of his orchard produce the most fruit; the reason is that they get more air, sunshine, wind, moisture and food. What better argument for wide planting?

Pruning is almost prehistoric in origin and is popularly supposed to be the kindergarten operation in fruit growing, yet as now practised it is a hit-and-miss cutting, sawing, chopping and shearing out of shoots, twigs, branches and limbs, designated by such expressive terms as "cutting-back," "heading in," "dehorning," and "thinning out the wood." There must always be a difference in the details of pruning but there are a few general facts and principles which every one who prunes should have well by heart. These, briefly stated, are as follows: (1) winter pruning increases the vigor of the plant; (2) summer pruning decreases the vigor of the plant; (3) prune weak-growing varieties heavily in the winter; strong-growing sorts, lightly; (4) overpruning induces the growth of suckers or watersprouts; (5) heavy pruning young trees delays fruiting; (6) all pruning must take into account the habit of growth of the tree; (7) some fruits bear on this year's wood, others on that of last year, and still others on older growth; pruning must take the age of bearing wood into account.

A man can care for his trees better if he makes a sharp distinction between pruning and training trees. The operations of pruning, as given above, have to do with the modification of the vigor and fruitfulness of the plants, but training, properly speaking, aims to keep the trees in manageable shape. Training, then, as to whether high-headed or low-headed, open-centered or close-centered, one-storied or two-storied, depends largely upon the conveniences and the whims and prejudices of the grower. It is probably more important that a definite ideal be chosen and adhered to than that any particular choice be made.

Cultivation is very generally practised with all fruits excepting the apple; some claim that this fruit in New York can be grown better in sod, in which case the grass may be cut as a mulch or it may be kept down by sheep, pigs or cattle. The various modifications of the sod method of managing orchards

have come in vogue because of the performance of a few individual orchards in the State. Unfortunately it is not yet known whether these orchards are the exception or the rule, that is, whether or not they represent the average run of apple orchards in New York.

The New York Agricultural Experiment Station at Geneva has an experiment to test these methods of orchard management. The following are the chief results for five years in this experiment, showing the annual average amount of fruit on 5 acres: sod, 340.2 barrels; tillage, 509.7 barrels; difference, 169.5 barrels. Annual acre average: sod, 68 barrels; tillage, 101.9 barrels; difference, 33.9 barrels an acre.

The one respect in which the sod-mulch fruit surpasses the tilled is in color. But since in every possible test the tilled trees are shown to be most vigorous, and since wounded, diseased, and decrepit trees always bear fruit of high color, it can be said that the bright color of the sod fruit is the hectic flush of disease.

The fruit on the sod-plat matures from two to three weeks earlier than that on the tilled land and there is even a greater difference in the length of time the apples from the two plats will keep. The fruit from the tilled plat is crisper, juicier and better flavored, a fact attested to by all of the many apple connoisseurs who have been asked to taste the apple. The growth of trees is more uniform on the tilled plat than on the sod and the crops on the trees, both as to size and quantity of fruit, are more uniform. In commercial orcharding it is greatly to be desired that trees behave uniformly.

How were the trees themselves affected? The health and vigor of a tree is almost directly proportional to the increase in the diameter of the trunk. The trees on the sod plat gained an average of 1.1 inches in diameter; on the tilled plat, 2.1 inches. This is as clear-cut and as accurate evidence as can be offered. The annual growth of new wood on an apple tree is a most important criterion because it measures both the vigor and the bearing capacity of the tree. The average annual growth per branch on the sodded trees was 3.4 inches; tilled trees, 6.7 inches, the tilled trees making twice the growth made by those on sod. The foliage of a tree is as ready a test and as delicate a one to determine health as the pulse is to a human being. The tell-tale tints of the leaves,

the size of leaves, amount of foliage, weight of foliage, total leaf area and length of time the leaves remain on the trees, all prove tillage the better method of orchard management to obtain health and vigor of tree.

One factor alone is quite sufficient to account for the differences noted between sod and tillage, namely, the supply of water. It is held by all soil authorities that in this climate, conserve it as best one can, the seasonal rainfall on the average soil is not more than sufficient for the best development of any crop; indeed it is seldom sufficient. If then we divide the rainfall between two crops, grass and apples, both must suffer.

A financial statement is always of interest. The average costs per acre of the two methods were: for the sod, \$17.92; tillage, \$24.47; \$6.55 per acre in favor of the sod-mulch. But the cost per barrel of apples was \$1.65 for the tilled plat and \$2.15 for the sod plat, \$.50 per barrel in favor of tillage. It is not cheap methods that give highest profits, but lowest cost of production.

The best modern orchard practice permits the growing of intercroops, hoed crops preferred, in an orchard until the trees come in bearing, and insists upon there being a cover crop sowed at the close of the season's cultivation to be plowed under as a fertilizer the following spring, and to cover the ground in winter as a protection to the tree roots from cold and to keep the ground from being worked and puddled by fall and spring rains. The use of intercroops and cover crops in orchards gives a splendid opportunity for the study of the likes and dislikes of plants, for some plants seem to be really particular as to the company they keep. For instance, there are observations and some experimental data to show that the peach and the potato will not break bread and sup together in peace and if grown in intimate contact the results are disastrous, especially to the peach. Much ill-feeling is manifest between the cereals and the peach; not so marked between the cabbage family and the peach; while members of the clover family are pleasant and profitable companions for peaches. All this suggests that crops for the orchard must be chosen with some care. If an intercrop is sown, keep tree and crop so separated that they can not trouble each other. In the use of cover crops usually

those are sown which will add most plant food to the soil, as clovers and vetches which have the power of taking nitrogen from the air.

The knowledge and skill of the entomologist and plant pathologist are indispensable in growing fruit and every commercial orchardist must know the insect and fungus pests and how to combat them. But men who can not or will not spray, the general farmer, the city suburbanite — the amateurs — should plant varieties measurably immune to the most troublesome pests, for there are such.

Fruit trees, like other plants, need fertilizer. Yet fruit crops do not require the addition of nearly so much fertilizer to the average soil as do farm and truck crops. The basis for this statement comes from observation, the experience of many fruit growers, but more particularly from experiments carried on at experiment stations. There are, too, several theoretical considerations as to why fruits in general do not require the addition of as much plant food as farm crops. These are: (1) From 80 to 90 per cent of a fruit crop is water; the food used in the foliage is returned to the soil. The percentage of solid matter is much greater in farm crops. (2) Trees have a preparatory season of several years before they begin bearing. Farm crops come and go in a season. (3) The growing season for trees is long, from early spring to late fall. It is comparatively short for farm crops. (4) The roots go down and spread out in the case of tree fruits but are comparatively restricted with farm crops. (5) Trees transpire relatively large amounts of water and therefore relatively diluted solutions of plant food may suffice to furnish food. (6) All tree fruits have "off years" in which to recuperate. (7) It is possible to give fruit trees more thorough cultivation, thereby better conserving moisture and making food more available, than in the case of farm crops.

It does not follow from what has been said that tree fruits never need fertilizers, but these considerations make it plain that exceedingly great care must be used in feeding trees if it is to be done without waste. The fruit grower ought to experiment very carefully to see that he gets the worth of his money before using any considerable quantities of fertilizers in an orchard.

Lastly, the fruit grower, of all tillers of the soil, should know the plants he works with; should have an insight into their life processes; should know how they are affected by external conditions; should understand the more or less distinct individuality of each tree. Fruit plants are various in kind and trees of one kind are often quite unlike because the conditions under which they are grown are dissimilar and because plants are inherently variable and plastic. It follows then that conditions must vary for every person who grows fruit and that there must be more or less diverse ideals, diverse methods and diverse results. But certain forces, embraced in what we call "good care," have brought all fruits from the wild to their present state of domestication, and these forces, modified and refined as we gain new knowledge, must be kept in constant operation.

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The following statements and tables are given by the United States Census Bureau in 1910 and are the latest reliable estimates made.

By reference to the production of various counties a fair idea of the availability of certain areas for the growing of the different kinds of fruit may be obtained.

Orchard fruits, grapes, nuts, and tropical fruits: 1909 and 1899.—The following table presents data with regard to orchard fruits, grapes, nuts, and tropical fruits. The acreage devoted to these products was not ascertained. In comparing one year with the other the number of trees or vines of bearing age is on the whole a better index of the general changes or tendencies than the quantity of product, but the data for the censuses of 1910 and 1900 are not closely comparable and the product is therefore compared, although variations may be due largely to temporarily favorable or unfavorable climatic conditions.

CROP.	TREES OR VINES OF BEARING AGE, 1910		TREES OR VINES NOT OF BEARING AGE, 1910		PRODUCT.		
	Farms report- ing.	Number.	Farms report- ing.	Number.	1909		1899
					Quantity. ¹	Value (dollars).	(Quantity. ¹)
Orchard fruits,							
Total.....		17,625,093		7,363,614	29,456,291	17,988,894	26,172,310
Apples.....	168,667	11,248,203	48,007	2,828,515	25,409,321	13,343,028	21,111,257
Peaches and nectarines.....	25,926	2,457,187	14,337	2,216,907	1,736,483	2,014,088	466,850
Pears.....	85,725	2,141,596	26,773	1,502,661	1,343,089	1,418,218	960,170
Plums and prunes.....	62,024	919,017	22,083	328,329	553,522	519,192	303,688
Cherries.....	59,408	673,989	20,087	312,959	271,597	544,508	218,642
Apricots.....	2,033	16,050	767	3,537	9,805	14,490	15,710
Quinces.....	12,280	169,031	3,404	140,703	132,451	135,345	(2)
Mulberries.....	11	20	2	3	20	25	(2)
Unclassified.....							³ 95,993
Grapes.....	34,256	31,802,097	7,250	3,801,800	253,066,361	3,961,677	247,698,055
Nuts							
Total.....		⁴ 164,333		⁴ 51,239	⁴ 2,773,858	⁴ 74,420	3,451,550
Persian or Eng- lish walnuts..	81	456	28	139	9,346	858	(2)
Black walnuts..	2,815	19,782	428	27,591	465,918	11,485	(2)
Butternuts.....	4,623	36,456	447	5,175	1,519,279	21,631	(2)
Chestnuts.....	1,797	72,976	198	12,841	286,227	23,589	(2)
Hickory nuts..	3,142	34,309	220	5,381	487,768	16,742	(2)
Unclassified.....							³ 3,451,550
Tropical fruits							
(figs).....	12	21	8	25		5	

¹ Expressed in bushels for orchard fruits and pounds for grapes and nuts.

² Included with "unclassified."

³ Consists of products not separately named by the enumerator, but grouped under the designation "all other."

⁴ Includes small amounts of almonds, pecans, hazelnuts, beechnuts, Japanese chestnuts, Japanese walnuts, filberts, and other nuts.

The total quantity of orchard fruits produced in 1909 was 29,456,000, valued at \$17,989,000. Apples contributed about six-sevenths of this quantity, peaches and nectarines and pears most of the remainder. The production of grapes in 1909 amounted to 253,066,000 pounds, valued at \$3,962,000, and that of nuts to 2,774,000 pounds, valued at \$74,000.

The production of all orchard fruits together in 1909 was 12.5 per cent greater than that in 1899, while the production of grapes increased 2.1 per cent. The value of orchard fruits increased from \$10,542,000 in 1899 to \$17,989,000 in 1909, and that of grapes from \$2,764,000 in 1899 to \$3,962,000 in 1909. It should be noted in this connection that the values for 1899 include the value of more advanced products derived from orchard fruits or grapes,

such as cider, vinegar, dried fruits, and the like, and may therefore involve some duplication, while the values shown for 1909 relate only to the products in their original condition.

The next table shows the quantities of the more advanced products manufactured by farmers from orchard fruits and grapes. Values were not called for on the schedule.

PRODUCT.	FARMS REPORTING, 1909		QUANTITY PRODUCED.		
	Num-ber.	Per cent of all farms.	Unit.	1909	1899
Cider.....	54,168	25.1	Gals...	5,191,221	4,597,519
Vinegar.....	13,547	6.3	Gals...	703,384	574,875
Wine and grape juice.....	1,823	0.8	Gals...	346,973	290,365
Dried fruits.....	1,290	0.6	Lbs....	4,385,978	3,658,610

Small fruits: 1909 and 1899.—The following table shows data with regard to small fruits on farms:

CROP.	Number of farms reporting, 1909	ACRES.		Quantity (quarts), 1909	Value, 1909
		1909	1899		
Small fruits, total.....		22,496	25,051	37,857,829	\$2,875,495
Strawberries.....	14,086	6,382	7,311	15,945,863	1,187,410
Blackberries and dewberries....	4,882	1,951	2,060	2,509,851	210,986
Raspberries and loganberries...	13,187	11,057	12,376	14,751,940	1,168,062
Currants.....	7,528	2,557	2,594	3,982,389	264,051
Gooseberries.....	1,696	259	196	331,135	23,427
Cranberries.....	88	277	113	327,370	20,743
Other berries.....	9	13	407	9,281	816

Strawberries and raspberries and loganberries are by far the most important small fruits grown in New York, with currants ranking next. The total acreage of small fruits in 1909 was 22,496 and in 1899, 25,051, a decrease of 10.2 per cent. The production in 1909 was 37,858,000 quarts, as compared with 40,376,000 quarts in 1899, and the value \$2,875,000, as compared with \$2,538,000.

VALUE OF ALL CROPS, ACREAGE AND PRODUCTION, STATE OF NEW YORK BY COUNTIES, 1909.

	The State.	Albany.	Allegany.	Broome.	Cattaraugus.	Cayuga.	Chautauqua.	Chemung.
FRUITS AND NUTS.								
Orchard fruits:								
Total.....	17,625,093	338,796	226,631	146,332	317,510	350,022	337,141	84,664
Apples.....	29,456,291	577,909	247,981	155,598	565,789	533,395	699,625	95,621
Peaches and nectarines.....	11,248,203	231,398	199,084	115,582	287,788	252,458	299,329	62,779
Pears.....	25,409,324	527,829	238,385	142,037	558,039	484,341	646,269	84,726
Plums and prunes.....	2,457,187	8,737	341	1,420	2,020	29,560	32,377	3,729
Cherries.....	1,736,483	933	146	1,472	510	13,149	15,486	1,781
Quinces.....	2,141,506	43,404	10,649	9,262	10,059	36,687	22,110	5,458
Total.....	1,343,089	30,275	6,571	6,498	4,364	23,088	13,633	4,589
Plums and prunes.....	919,017	42,230	10,420	8,901	8,973	14,913	15,848	5,375
Cherries.....	553,522	13,842	1,883	3,524	1,404	6,708	9,378	2,529
Quinces.....	673,989	12,355	6,019	11,094	8,464	14,390	24,483	7,219
Total.....	271,597	4,378	985	3,054	1,379	5,558	12,630	1,983
Quinces.....	169,031	510	85	35	172	1,829	2,951	45
Total.....	132,451	603	10	4	33	507	2,020	6
Small fruits:								
Total.....	31,802,097	8,782	857	4,922	180,292	56,113	15,782,646	3,579
Strawberries.....	253,006,361	85,381	17,822	94,653	1,525,123	661,826	132,029,939	50,273
Raspberries and loganberries.....	22,496	588	31	146	187	173	993	142
Strawberries.....	37,857,829	821,241	72,359	298,871	255,918	243,117	1,644,853	199,321
Raspberries.....	15,945,863	394,877	47,706	231,232	125,822	103,977	551,125	120,073
Raspberries and loganberries.....	11,057	227	6	48	51	73	517	82
Total.....	14,751,940	251,410	10,940	45,413	84,462	100,363	709,987	63,824
Nuts:								
Total.....	164,333	2,647	904	3,049	2,474	1,893	2,492	1,631
Walnuts.....	2,773,858	23,545	19,962	62,144	45,750	63,335	91,326	32,518

VALUE OF ALL CROPS, ACREAGE AND PRODUCTION, STATE OF NEW YORK BY COUNTIES, 1909. — *continued.*

	Cheauango.	Clinton.	Columbia.	Cortland.	Delaware.	Dutchess.	Erie.	Essex.
FRUITS AND NUTS.								
Orchard fruits:								
Total.....	162,137	159,872	617,380	117,521	213,823	424,730	613,450	80,040
Apples.....	244,443	75,816	1,055,771	140,350	362,019	863,291	680,791	48,481
Peaches.....	145,004	147,313	297,579	95,277	190,896	303,015	472,932	71,168
Peaches and nectarines.....	234,738	73,691	892,590	131,575	350,229	794,753	623,234	40,257
Pears.....	24	82	51,818	402	89	63,741	10,987	472
Plums.....	9	21	8,411	229	32	30,132	3,858	19
Plums and prunes.....	7,474	3,548	170,777	7,918	8,024	34,870	70,056	1,527
Cherries.....	6,650	1,880	121,691	4,994	6,971	23,805	31,327	1,365
Quinces.....	5,414	5,111	17,433	5,641	8,992	14,690	25,301	2,591
Grapes.....	2,044	84	7,784	1,883	3,105	10,731	10,580	495
.....	3,603	3,810	78,526	8,197	5,759	7,097	29,483	4,273
.....	1,000	140	25,002	1,029	1,653	3,474	10,534	544
.....	8	1	1,180	45	45	1,242	4,524	4
.....	.....	.....	278	13	24	382	1,229	.....
.....	2,041	770	364,074	1,026	1,295	72,594	1,141,278	14,116
.....	52,073	12,923	3,482,633	20,316	30,666	585,356	10,638,849	57,579
Small fruits:								
Total.....	56	21	620	69	43	214	1,603	42
Strawberries.....	78,380	30,947	1,274,978	81,873	71,250	591,877	3,070,452	44,083
Raspberries.....	18	12	309	20	16	160	596	12
.....	39,115	18,356	851,946	35,340	36,650	490,816	1,659,635	22,273
.....	23	5	153	33	14	21	908	19
.....	24,663	5,524	202,083	31,691	18,467	43,612	1,277,766	14,132
Nuts.....	2,531	736	3,092	5,174	8,403	1,765	4,498	2,986
.....	81,102	26,993	58,855	52,275	96,087	40,788	96,614	22,571

VALUE OF ALL CROPS, ACREAGE AND PRODUCTION, STATE OF NEW YORK BY COUNTIES, 1909. — *continued.*

	Franklin.	Fulton.	Genesee.	Greene.	Hamilton.	Herkimer.	Jefferson.	Kings.
FRUITS AND NUTS.								
Orchard fruits:								
Total.....	74,533	34,088	429,233	419,602	4,847	96,417	90,616	66
Apples.....	75,945	35,250	638,015	721,179	6,463	145,437	86,392	49
Peaches.....	73,303	31,181	300,865	274,123	4,793	83,641	79,896	50
Peaches and nectarines.....	75,795	33,937	581,026	630,061	6,451	136,281	82,413	40
Pears.....	49	48	14,530	22,624	.....	17	331	4
Plums.....	29	40	5,706	2,854	.....	13	105	4
Plums and prunes.....	291	1,188	85,035	122,882	.....	4,047	2,896	12
Cherries.....	66	920	36,608	75,902	.....	4,479	1,643	5
Quinces.....	511	907	13,525	19,242	51	6,157	2,856	.....
Grapes.....	24	240	8,916	9,018	.....	3,853	857	.....
Small fruits:	376	736	11,070	9,927	3	2,581	4,631	.....
Total.....	30	112	3,758	2,962	.....	805	1,571	.....
Strawberries.....	3	14	4,038	652	.....	6	5	.....
Raspberries and loganberries.....	1	.....	1,975	360	.....	.....	2	.....
Nuts.....	314	684	8,960	13,139	.....	971	2,337	99
Total.....	5,761	14,001	165,429	116,328	25	30,946	22,539	800
Small fruits:								
Total.....	79	76	95	85	3	206	122	1
Strawberries.....	66,283	179,470	130,784	131,739	2,072	539,848	157,002	558
Raspberries.....	51	38	36	34	1	173	53	1
Nuts.....	34,008	135,165	58,028	64,131	1,295	498,424	91,887	558
Small fruits and loganberries.....	19	24	44	23	2	13	31	.....
Nuts.....	22,260	29,373	60,028	30,211	375	19,860	30,065	.....
Total.....	83	525	1,574	3,192	1	4,234	2,145	.....
Nuts.....	4,925	12,265	50,559	40,035	50	97,824	21,655	.....

VALUE OF ALL CROPS, ACREAGE AND PRODUCTION, STATE OF NEW YORK BY COUNTIES, 1909.—*continued.*

	Lewis.	Livingston.	Madison.	Monroe.	Montgomery.	Nassau.	New York.	Niagara.
FRUITS AND NUTS.								
Orchard fruits:								
Total.....	30,496	189,671	163,970	1,407,691	97,906	18,547	58	2,078,430
Apples.....	33,553	243,097	238,115	3,096,393	140,105	22,908	30	3,378,343
Peaches and nectarines.....	29,341	144,958	140,569	2,702,841	77,804	10,140	35	2,801,155
Pears.....	33,196	218,441	225,464	2,352,378	131,264	15,403	.....	2,366,000
Plums and prunes.....	14	19,251	216	339,375	309	4,015	.....	591,350
Cherries.....	2	12,767	66	257,576	226	2,201	.....	561,439
Quinces.....	256	8,634	6,563	92,134	5,159	3,491	19	381,710
Small fruits:	186	4,562	6,031	117,044	2,742	4,746	30	216,227
Total.....	560	7,943	9,462	92,986	9,001	216	.....	180,801
Grapes.....	119	3,839	4,903	75,259	4,411	72	.....	148,702
Strawberries.....	325	7,941	7,105	49,831	5,561	487	4	61,786
Raspberries and loganberries.....	50	3,183	1,632	28,187	1,447	287	.....	29,011
Nuts.....	.....	880	31	30,121	37	174	.....	58,206
.....	.....	273	12	25,842	4	128	.....	56,124
.....	174	95,909	13,790	188,477	8,612	1,139	23	358,312
.....	1,197	721,430	202,800	2,138,752	81,787	18,275	320	4,065,201
Small fruits:								
Total.....	34	204	212	1,283	89	149	9	752
Strawberries.....	58,373	326,104	302,446	2,540,005	117,489	268,726	51,100	1,179,339
Raspberries.....	21	57	40	396	21	144	9	180
Nuts.....	42,624	155,073	62,314	1,103,390	45,515	263,682	50,900	328,986
.....	4	108	98	602	38	2	.....	305
.....	5,383	138,332	110,753	951,895	45,454	1,458	.....	475,729
.....	135	2,581	3,543	4,850	2,700	17	.....	1,571
.....	4,750	34,586	96,287	91,081	42,530	1,140	.....	58,207

VALUE OF ALL CROPS, ACREAGE AND PRODUCTION, STATE OF NEW YORK BY COUNTIES, 1909.—*continued.*

		Oneida.	Onondaga.	Ontario.	Orange.	Orleans.	Oswego.	Otsego.	Putnam.
FRUITS AND NUTS.									
Orchard fruits:									
Total.....	trees.....	212,550	269,171	596,387	388,988	970,629	404,084	220,042	61,349
Apples.....	bushels.....	279,913	317,129	1,061,244	432,317	2,533,849	485,427	295,931	127,622
.....	trees.....	184,979	202,140	369,050	122,633	549,749	269,724	194,986	48,483
Peaches and nectarines.....	bushels.....	204,627	282,411	913,214	277,355	2,229,462	405,951	282,384	121,815
.....	trees.....	103	6,409	56,495	212,879	137,934	16,271	60	4,698
Pears.....	bushels.....	16	2,933	37,505	124,262	140,898	9,421	19	2,095
.....	trees.....	9,860	13,900	74,451	33,098	196,513	101,412	10,358	3,149
Plums and prunes.....	bushels.....	7,665	11,959	45,927	21,994	105,233	58,163	8,965	1,955
.....	trees.....	11,686	20,226	52,603	11,479	26,313	12,529	10,569	2,353
Cherries.....	bushels.....	6,177	11,066	32,761	4,617	25,971	8,335	3,525	1,046
.....	trees.....	5,885	25,932	36,394	7,863	14,682	3,508	4,021	2,147
Quinces.....	bushels.....	1,447	8,593	28,374	3,635	8,979	3,461	1,037	505
.....	trees.....	36	448	6,998	934	25,233	557	32	485
Grapes.....	bushels.....	1	116	3,289	435	23,125	77	.....	201
.....	vines.....	6,049	47,149	1,831,644	200,733	38,321	8,891	1,265	2,134
.....	pounds.....	114,405	630,767	11,155,951	1,098,745	565,904	160,299	37,272	12,060
Small fruits:									
Total.....	acres.....	193	359	2,182	1,192	236	764	132	8
Strawberries.....	quarts.....	382,329	862,253	2,903,359	1,727,892	300,311	1,488,157	184,098	14,323
.....	acres.....	113	149	87	310	53	361	37	3
Raspberries and loganberries.....	quarts.....	269,840	412,545	121,683	795,411	92,569	1,021,121	73,772	9,658
.....	acres.....	48	143	1,907	156	83	316	58	1
Nuts.....	quarts.....	67,269	318,712	2,560,565	274,352	105,157	354,126	78,269	795
.....	trees.....	1,939	5,607	1,682	1,419	28,021	3,709	220	220
.....	pounds.....	88,756	116,185	31,665	48,509	46,486	146,163	117,940	7,390

VALUE OF ALL CROPS, ACREAGE AND PRODUCTION, STATE OF NEW YORK BY COUNTIES, 1909.—*continued.*

	Queens	Rensselaer.	Richmond.	Rockland.	St. Lawrence.	Saratoga	Schenectady.	Schoharie.
FRUITS AND NUTS.								
Orchard fruits:								
Total.....	1,226	224,755	3,253	98,701	152,711	178,640	68,747	197,799
Apples.....	1,454	345,776	1,965	135,221	181,036	192,452	90,270	233,618
Peaches and nectarines.....	122	159,354	742	58,360	150,130	137,202	49,632	163,702
Pears.....	162	390,738	1,211	116,235	180,406	175,868	82,252	219,343
Plums and prunes.....	613	13,353	1,910	21,081	9	1,338	729	1,574
Cherries.....	804	1,387	488	7,034	11	14	51	51
Quinces.....	403	28,049	478	11,166	428	15,718	4,719	8,671
Small fruits:								
Total.....	372	28,727	213	8,661	330	10,427	3,613	6,488
Strawberries.....	3	13,935	28	3,031	1,155	11,039	7,204	17,484
Raspberries and loganberries.....	75	5,163	63	1,438	135	3,257	2,337	6,406
Blackberries.....	82	9,528	44	3,398	989	13,187	6,368	6,186
Quinces.....	4	3,681	44	1,396	154	2,866	2,004	1,280
Grapes.....	854	297	32	697	.....	118	81	91
Small fruits:								
Total.....	8	70	9	252	.....	9	10	11
Strawberries.....	854	10,408	730	5,513	.....	4,907	2,398	2,869
Raspberries and loganberries.....	8,754	137,315	5,080	67,015	15,564	69,081	29,885	58,282
Nuts:								
Total.....	5	348	90	108	70	223	156	92
Walnuts.....	21,164	715,791	151,454	165,827	79,034	371,609	212,752	119,041
Almonds.....	5	185	82	67	34	110	62	7
Raspberries and loganberries.....	21,000	516,003	144,020	110,121	41,388	251,470	111,777	11,292
Blackberries.....	.....	105	6	17	16	71	38	68
Quinces.....	.....	139,650	4,920	23,458	13,478	70,088	67,561	91,256
Nuts.....	2	5,958	.....	187	1,418	3,994	381	3,470
Total.....	100	31,518	.....	3,750	44,712	85,086	1,730	112,491

VALUE OF ALL CROPS, ACREAGE AND PRODUCTION, STATE OF NEW YORK BY COUNTIES, 1909.—*continued.*

		Schuyler.	Seneca.	Steuben.	Suffolk.	Sullivan.	Tioga.	Tompkins.
FRUITS AND NUTS.								
Orchard fruits:								
Total.....	trees.....	173,581	307,429	310,814	79,253	174,061	100,632	191,077
Apples.....	bushels.....	153,441	405,556	366,020	53,398	322,216	101,567	192,837
	trees.....	90,567	123,437	248,951	27,760	159,258	76,203	119,084
Peaches and nectarines.....	bushels.....	108,352	276,604	338,957	28,431	345,058	90,324	154,058
	trees.....	51,993	81,440	8,200	30,333	3,382	4,965	34,090
Pears.....	bushels.....	24,706	61,279	3,154	16,096	1,809	2,001	17,833
	trees.....	5,888	29,468	17,755	15,038	6,762	6,596	16,609
Plums and prunes.....	bushels.....	4,359	23,066	12,269	6,779	4,227	4,942	12,613
	trees.....	18,301	33,190	20,258	2,423	2,811	5,507	9,908
Cherries.....	bushels.....	12,148	26,895	7,747	823	7,702	2,253	4,438
	trees.....	6,525	27,063	15,412	2,657	1,730	7,279	10,847
Quinces.....	bushels.....	3,705	8,952	3,802	852	399	2,031	3,700
	trees.....	232	1,391	257	956	99	35	461
	bushels.....	132	534	39	412	18	4	166
Grapes.....	vines.....	923,263	561,869	2,568,026	5,265	3,563	2,607	71,922
	pounds.....	5,253,621	6,157,171	17,569,702	72,849	61,549	56,413	530,090
Small fruits:								
Total.....	acres.....	701	71	271	385	22	75	101
Strawberries.....	quarts.....	619,209	112,510	317,574	563,395	38,554	127,480	154,434
	acres.....	28	36	58	108	8	30	46
Raspberries and loganberries.....	quarts.....	51,266	59,461	150,646	224,332	18,623	85,007	103,497
	acres.....	650	20	179	13	6	30	36
Nuts.....	quarts.....	546,695	32,070	138,172	12,593	10,846	29,038	31,708
	trees.....	372	542	1,792	256	644	1,982	1,982
	pounds.....	7,847	8,950	36,699	12,198	5,995	58,417	43,529

VALUE OF ALL CROPS, ACREAGE AND PRODUCTION, STATE OF NEW YORK BY COUNTIES, 1909. — *concluded*.

	Ulster.	Warren.	Washington.	Wayne.	Westchester.	Wyoming.	Yates.
FRUITS AND NUTS.							
Orchard fruits:							
Total.....	688,792	81,702	136,177	1,153,372	171,250	316,763	274,938
Apples.....	949,753	65,539	140,229	3,558,213	279,899	644,313	299,702
trees.....	240,933	75,557	111,069	812,410	139,937	270,801	161,161
bushels.....	667,571	63,514	128,006	3,304,197	253,870	624,809	238,606
Peaches and nectarines.....	313,971	181	185	166,854	16,172	3,683	48,350
trees.....	196,190	.....	.....	130,554	12,614	1,232	23,809
bushels.....	95,392	795	9,382	102,279	9,350	25,420	32,549
Pears.....	68,307	473	7,662	78,034	10,620	12,519	17,635
trees.....	24,138	2,578	7,842	21,976	2,194	9,462	19,841
bushels.....	10,990	1,161	2,910	15,711	1,350	3,849	13,702
Cherries.....	11,005	2,578	7,626	35,385	2,384	6,134	10,002
trees.....	6,353	389	1,643	18,304	956	1,631	4,364
bushels.....	3,277	6	58	14,119	1,178	1,211	2,754
Quinces.....	320	2	6	11,244	479	1,179	1,437
Grapes.....	1,969,301	1,165	2,618	65,076	5,511	6,525	5,133,572
trees.....	13,358,000	23,117	63,126	1,083,859	120,526	57,197	36,941,168
Small fruits:							
Total.....	2,797	62	75	2,011	95	98	1,297
Strawberries.....	6,371,934	87,185	134,382	3,558,505	154,497	121,538	966,480
acres.....	895	39	38	192	61	25	41
Raspberries and loganberries.....	2,791,601	69,820	90,200	396,371	125,691	42,825	67,295
acres.....	707	13	17	1,552	15	48	1,225
Nuts.....	1,214,514	9,853	20,435	2,812,202	14,033	50,065	854,517
trees.....	8,391	1,286	2,236	2,456	2,224	693	230
pounds.....	124,732	30,475	36,732	89,329	15,314	43,451	7,920

The following bulletins and circulars on horticultural matters will be sent on application.

Bulletin No. 2, Blister Rust of Pines

Bulletin No. 39, Inspection, Certification and Transportation of Nursery Stock

Bulletin No. 41, Wart Disease of the Potato (including colored plate)

Circular No. 20, Brown Tail Moth (colored plate)

Circular No. 21, Gipsy Moth (colored plate)

Circular No. 36, Potato Breeding

Circular No. 38, Effect of Climate and Soil on Apples

Circular No. 40, Codling Moth

Circular No. 41, Apple Scab

Circular No. 43, Renovation of Worn Out Orchards

Circular No. 50, Apples, Pears, Peaches and Quinces (Article 11, Agricultural Law)

Circular No. 51, Inspection and Sale of Seeds

Circular No. 58, Spray Formulae

Circular No. 63, Inspection of Nurseries and List of Nurserymen

STATE OF NEW YORK
DEPARTMENT OF AGRICULTURE

CALVIN J. HUSON, *Commissioner*

Bulletin 49

The Honey Bee

BY

WHEELER DENNISON WRIGHT

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THE HONEY BEE

INTRODUCTION

The honey bee may well be counted as a friend of the human race, since besides furnishing large quantities of the most healthful sweet known, the commercial importance of which at this day is by no means insignificant, it is also of great value as a fertilizing agent to many of the crops produced by the farmer and horticulturist, obtaining results which could not otherwise be secured.

Beekeeping on a commercial scale is far from being a royal road to wealth as pictured by some, but requires as much labor, diligence and attention to details as many other lines of business. However, the thorough going apiarist, well adapted and educated to the business, given a good location and a favorable season, usually has no complaint to offer. As along other agricultural lines, weather conditions often exert an adverse influence and poor seasons intervene, which necessitate extra care, fortitude and enthusiasm on the part of the beekeeper, to safely bridge them over.

In a small way, beekeeping is quite popular as a recreation for persons of sedentary habits, also as a light employment for invalids, giving healthful open air exercise; at the same time affording mental relief.

The Empire State ranks high in the production of surplus honey and numbers its beekeeping specialists by the hundred. Its honey yielding flora is extensive and diversified.

The apiary inspectors of this department have for years given information and instruction on beekeeping to those desiring it — especially amateurs — and the object of this bulletin is to supplement such instruction with matter in suitable form for ready reference. Only such equipments as are admissible in the best modern apiary of the specialist are shown and recommended. These the beginner would do well to adopt at the start, so far as his necessities demand.

On account of the limited character of this bulletin many details are necessarily omitted. Those desiring to pursue the subject further are referred to the unabridged works on beekeeping enumerated herein.

LOCALITY

Doubtless there are but few localities in this state in which a few colonies of bees could not be kept with profit; but when a person expects to make a specialty of the business, it is highly essential that he should study thoroughly any given location to determine its possibilities in honey production, before he concludes to settle down permanently.

Some sections of the state, particularly the northern, furnish the finest quality of white clover honey obtainable. Years ago, basswood was a prolific source of honey in many localities, but it is fast becoming a thing of the past on account of its value for other purposes.

Some of the leading apiarists of central New York claim much for alfalfa as a honey yielder, but it has reached its greatest fame in the western states.

In sections where buckwheat is grown extensively a good yield is frequently obtained, and very seldom a total failure experienced, since the season of blooming is late (generally in August), and all colonies should be in condition to do good work. This is not always the case during clover and other early blooms.

Alsike clover is abundant in many sections, and is a splendid honey producer. Sweet clover (*mellilotus alba*), blue thistle, sumac and goldenrod are sometimes quite plentiful and add largely to the product of the apiary. Fruit bloom and black locust occasionally yield honey freely, but come on before most of the colonies are very populous, hence they do not afford much if any surplus, but are very useful to promote breeding.

A location where several of the above named sources of supply are abundant should give good returns in an average season.

Having found a desirable location as regards pasturage, etc., there is still one other very important point for consideration, namely, whether there are any apiaries of considerable size within four or five miles of the point in question. If so, the newcomer

is advised to pass along to a locality that is free from large apiaries, since most localities may be overstocked with bees, as many are at present.

It is the height of folly for an apiarist to locate an apiary near one already established, as the profits are then divided, the full amount of which might be enjoyed by each, if separated a few miles. In some sections and seasons this could make the difference between success and failure.

The number of colonies that may be kept in a single apiary with the maximum of profit can be determined only after a careful study of the resources of the section in which the apiary is located, within a series of years of experience, and by adapting the management and manipulation to the requirements of such locality. Seventy-five to one hundred colonies should be the limit until experience proves that the number may be increased. Many extensive apiarists, especially those who conduct several apiaries each, restrict the number to one hundred colonies or less, and place them four or five miles apart.

A gentleman of central New York for years limited his colonies to sixty, considering this number sufficient for the best results in his location, and he secures good yields of surplus comb honey, occasionally reaching an average of one hundred pounds per colony.

A prominent beekeeper of Long Island keeps but forty or fifty colonies in an apiary, and places the yards three or four miles apart, claiming that the flora of that locality will not profitably maintain a greater number.

There are localities in this state that are ideal in their capacities for honey secretion. Many of these are fully stocked with bees, while undoubtedly many others as good contain few, if any, bees. Some of these are necessarily somewhat remote from the railroads and principal thoroughfares, but the additional expense for transportation, etc., would find compensation in the larger yield to be obtained in an otherwise unoccupied location.

The successful apiarist must acquaint himself with the honey yielding flora of his locality, the time of blooming of each variety, and the length of time it may be expected to continue, that he may prepare for the harvesting of the surplus crop, by having his

apiary in proper condition at the right time, with the necessary equipment at hand and ready for application.

LOCATING AN APIARY

An ideal location for an apiary would be upon a dry, level or nearly level lot, protected from the prevailing winds by hills, trees or buildings. A gentle slope to the east or south would be desirable, with the hives facing these respective points. Hives may face any direction in summer but at other seasons, especially in the spring, it is desirable to have them so placed that they may receive the maximum amount of sunshine at the entrance for the protection of the foraging bees; and to avoid the entrance of cold winds.

The apiary should be placed a reasonable distance from dwellings and highways — one hundred feet or more — to avoid danger to people or animals from stings. It is easier and wiser to locate right at the outset than to adjust matters after harm is done, as it is better to be sure than sorry. A high screen or hedge intervening is a great protection at any point.

In most rural communities no land is too good to be occupied by an apiary, and scarcely any crop will produce an equal revenue. The writer has seen apiaries located in hog and hen yards, in stump and brush lots, in rough stone lots, and on steep sidehills and cliffs, where it was very inconvenient and moreover positively dangerous to handle bees or hives, their owners apparently thinking that any old place was good enough for bees, and withholding land that could be used for other purposes.

An orchard where the trees are not too thick is often a desirable place for bees, furnishing shade in hot weather for the benefit of both the bees and their keeper. There should be a good turf and the grass kept short, preferably with a lawn mower. Where convenient, sheep might be used to keep the grass down.

It is a good plan to place hives separately or in pairs with a convenient distance between for handling hives or honey, using a wheelbarrow — which is a very useful implement in the apiary — and swinging a scythe when it is necessary to cut grass in that way. Where land is plentiful, the rows may be placed eight feet or more apart, with hives six or eight feet apart in the row. Each hive should have a separate stand so that it can be

worked from any or all sides, or taken up complete and moved elsewhere.

Generally, bee houses or sheds should not be tolerated as it is very inconvenient to handle bees in them and they harbor insect enemies of the bees, such as spiders, wasps, etc., besides incurring a useless expense. There are occasional exceptions to this rule as where an apiary is situated in a locality infested by marauders. In this case a bee house of the style used by Mr. F. B. Loucks of Lowville, N. Y., might be desirable. Continuous benches or stands are open to practically the same objections.

Hives should stand moderately close to the ground — say from three to six inches — so as to improve their stability when tiered several stories high, and to enable the field bees to more readily gain the entrance in windy or cool weather. They should also be level both ways to give the yard a tidy appearance.

When the apiary exceeds the maximum in number for profit in a given locality, a portion of the stock should be disposed of or out-apiaries established, subject to the conditions before mentioned.

APPARATUS

Other than hives, the necessary paraphernalia for conducting an apiary need not be extensive, but should be the best of its class, as the best is none too good. The number of implements should be limited to actual requirements, as simplicity should be the keynote throughout, avoiding perplexity, complication and unnecessary expense.

HIVES

“What hive shall I adopt?” is a question of considerable importance to the beginner. No beekeeper with any pride in himself or his business would think of adopting any other than a movable-frame hive, of which there are a variety. Several of these are good, but the most popular one at the present day was invented by the Rev. L. L. Langstroth in 1851, to whom the beekeepers of this and all other countries owe a lasting debt of gratitude for the invention that is responsible, in the main, for placing bee culture and honey production on the high plane it occupies to-day.

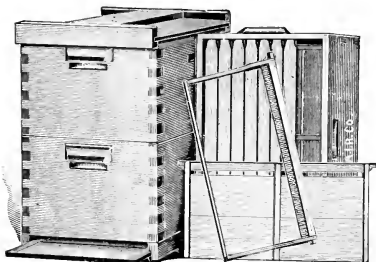


FIG. 39. Standard ten-frame Langstroth hive for extracted honey

The Langstroth hive is standard and may be obtained from nearly all supply dealers at all times, which is a great advantage when the apiarist desires to purchase, rather than build his own hives. By buying in quantities, in the flat, the price is moderate.

This hive is built in two sizes generally, for eight and ten frames. Many beekeepers heretofore have used the eight-frame size for the production of comb honey and the ten-frame size for extracted. Experience has shown that the ten-frame size is the best for an all purpose hive. When run for extracted honey they can be tiered up several stories high if necessary, and will be more stable than a narrower hive, which would need tiering higher to contain the same space. The large size of the brood chamber tends to discourage swarming, when the queen is kept below by an excluder; also more honey is likely to be stored there than in one of smaller size, which necessitates less feeding for winter stores. Mr. James McNeill of Hudson, N. Y., and Mr. R. F. Holtermann of Canada, extensive producers of extracted honey, use and prefer a hive and super holding twelve Langstroth frames.

There are advantages in having the brood chamber and super of the same size as they are then interchangeable and may be used for either purpose. However, for those who consider the full-depth super too heavy to handle conveniently when filled with honey, the half-depth super may be substituted. Some honey producers prefer

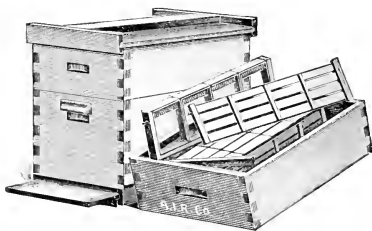


FIG. 40. Standard Langstroth hive for comb honey

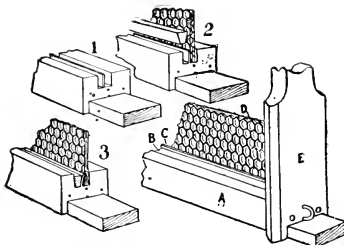


FIG. 41. Hoffman frame, showing method of putting in foundation starters

place of those omitted, especially in the case of newly-hived and shaken swarms. The wide hive gives larger surplus capacity, which is often desirable.

The ten-frame Langstroth hive is $16\frac{1}{4}$ inches wide, 20 inches long outside measure, and full $9\frac{1}{2}$ inches deep. The frames are $9\frac{1}{8}$ inches deep by $17\frac{5}{8}$ inches long. There are several styles of

these — the plain staple-spaced, metal-spaced and Hoffman. For a self-spaced frame, the latter is one of the best and has stood the test of time. The advantages are that they can be handled in groups, are quickly spaced when closing a hive; the hive can be readily carried about the apiary or into the winter repository without especial care, and when the bees are properly confined to the hive, it is ready for hauling or shipment to any distance. A follower should be used at one side of the hive and held tightly against the frames by a wedge or spring.

A plain, simple cover and bottom board is best. The cover should be light and covered with tin or galvanized iron, preferably the former on account of lighter weight; then there should be an under cover of wood three-eighths of an inch thick, cleated,

it, but it is less economical since double the number of supers and frames must be purchased and handled for the same amount of surplus.

In using this size of hive for comb honey production, it is often desirable to contract it, using fewer frames with dummies in

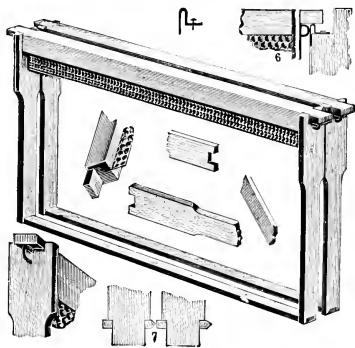


FIG. 42. Detail of Hoffman frame, showing position of beveled edges, and frame resting on metal rabbet in hive.

which may also contain a bee escape, with flap to cover same when not in use. Enameled drilling or duct used with the enameled side next the bees also makes a fine under cover, but is not as durable as wood.

All hives in an apiary should be of the same size, accurately made, of good material, and well painted with some light color for durability and better appearance. Whatever style of hive is adopted by the beginner should be adhered to, as changes in equipment are expensive.

In nailing up hives care must be exercised to place the metal rabbets in proper position. Place the heart side of the boards out to the weather. Nail Hoffman frames with the "V" edge in opposite directions at each end, holding the "V" toward the fingers of the right hand in putting together, and make all frames alike so that they may be reversed, end for end, and be perfectly interchangeable.

QUEEN EXCLUDERS

The queen excluder is constructed in several styles, namely, the

wood and wire with narrow strips of each alternating and built up into a board the size of the hive; the wood-zinc, consisting of strips of wood and perforated zinc built up in the same manner, and sheets of perforated zinc either plain or wood bound, the size of the

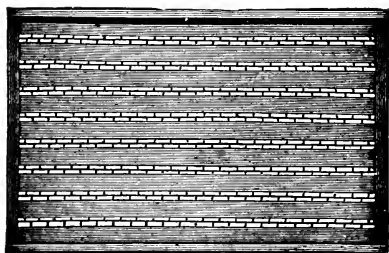


FIG. 43. Queen Excluder

hive. In use these full-sized sheets are undesirable as they are too flimsy and frequently become kinked in removing from the hive after being thoroughly propolized.

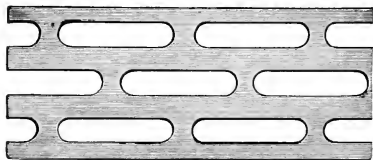


FIG. 44. Queen Excluder Metal

The built-up boards are much more satisfactory and durable. The wires for this purpose are secured at the proper distance apart and the zinc perforated at exactly the right size — about $\frac{5}{32}$ of an inch in width — to keep the queen below, but allow the workers to

pass up into the supers. In the production of extracted honey, the use of these excluders is very essential since all brood is best kept in the brood chamber, and out of the extracting combs where it becomes a nuisance if allowed. Also, less pollen is stored there. Excluders are not needed between the brood chamber and honey supers, unless supers are placed over a swarm before the comb is built in the brood chamber, or the brood nest established.

BEE ESCAPE

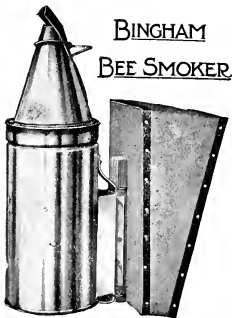
The bee escape is a simple little appliance fitted into a board the same size as the hive, placed under the supers of either comb or extracted honey, whichever it is desired to remove from the bees. The bees in the supers pass down into the hive, but none can return. This method is slower than smoking or brushing, requiring from twelve to twenty-four hours or longer, depending on the temperature, to clear the super of bees; however, it is valuable at the close of the season or whenever bees are inclined to rob. It is also popular with beginners and those who are in any way timid in handling bees.



FIG. 45. Bee Escape

SMOKERS

It is folly to attempt the handling of bees extensively without a first-class smoker, numerous kinds of which are on the market.



**BINGHAM
BEE SMOKER**

FIG. 46. Bingham Bee Smoker
(Courtesy of the American Bee Journal)

The essential points are light weight, powerful and cold blast, light and quick action of the bellows, and durability. The Bingham is a good example. Some makes have too wide a spread of the bellows so they cannot be readily grasped by the hand and are thus tiresome to work. In the lowest priced smokers the stove is made of tin. This answers for a time, but if used freely in a large apiary soon rusts out. Copper or brass, preferably the latter, makes a much better implement. The smaller size will answer better for a small or medium-sized apiary but for

use in a large apiary, the larger sizes are more effectual and require less attention in replenishing fuel. Numerous substances may be used as fuel, among which is rotten wood. This is not all alike, and only that which is thoroughly decayed, fine grained and firm, and contains no hard spots, should be used. It must be dry and is therefore best secured in dry weather. Willow, maple or apple wood are favorites with the writer, but planer shavings — those from hardwood — are more lasting; old burlap sacking, which may be rolled up in suitable size, tied a few inches apart and cut in cartridges with a sharp hatchet is also desirable. Greasy waste may be very effectual, but is so pungent as to be very offensive to some persons, and it seems a pity to desecrate the honey-laden home of the busy bee with such a foul odor, when something else will answer as well, to say the least.

Cotton rags, dipped in a strong solution of salt peter and dried, are very convenient for starting the smoker quickly. Use a little fine, dry, rotten wood or shavings on this until well started; then fill the stove with the regular fuel — thus avoiding the necessity of using hot coals or kerosene oil at the start, as many beekeepers do, which is more inconvenient and increases the fire hazard.

VEILS

In addition to a good smoker, the novice will need protection in the form of a veil. This will inspire confidence and give a sense of security that will permit him to handle bees with a better chance of success. Even the veteran apiarist can often do more and better work in a large apiary by condescending to wear a veil.

Protection for the hands is seldom needed by any



FIG. 47. A good bee veil
(Courtesy of the American Bee Journal)

one, except possibly the beginner. The old adage that "a cat in gloves catches no mice" is applicable here.

HIVE TOOL

Some kind of hive tool is a necessity, and Root's, illustrated herein, is excellent. It is used for prying covers, supers and bottoms loose from the hives, prying frames apart, etc., and the scraper end for cleaning frames, bottom boards and



FIG. 48. Root's Hive Tool

other surfaces of propolis and wax. It is nicely tempered as it is not soft enough to bend nor hard enough to break with ordinary use. It surpasses any other implement for the purpose.

FEEDERS

There are several styles of bee feeders on the market, both large and small. The former are used principally for supplying winter stores to colonies which have failed to store in the brood chamber the required amount, which is about thirty pounds. The smaller ones are used for stimulative purposes in the spring, or at any time in the season when a shortage occurs. By using large hives, the brood chambers often contain honey enough to bridge over short periods of scarcity without feeding. The entire apiary should be examined at the close of the season. Experienced apiarists can, by lifting, determine whether a colony is short of stores, and how much will be required to make them safe. Others should weigh the hives and deduct the proper amount for the weight of hives, combs and bees; then bring the amount of stores up to thirty pounds.

In the spring, a sharp watch must be kept on all strong colonies, as such use large quantities of honey for brood rearing and then sometimes starve before getting honey from the fields. If the beekeeper has no honey in combs that he can supply them with, it will pay him well to feed them until the flowers yield a sufficiency.

In the most favorable localities, where there is a fall flow, by proper management, nearly all feeding can be avoided.

WHEELBARROW

In apiaries of any size a light, strong, spring wheelbarrow is a great labor saver. It is very useful in transporting hives and their accessories about the apiary, also supers of comb and extracted honey to the storehouse and extracting room. If the ground is smooth it can even be used to carry colonies to or from the winter repositories, by placing under the hives a thick, soft cushion for a shock absorber.

AUTOMOBILES.

Since automobiles have been greatly reduced in cost, they are becoming quite popular with beekeepers for use in traveling to out-apiaries, taking honey to market in small lots or retailing to private customers. A light auto truck may be used, or a touring car with removable tonneau, or a runabout of suitable design may be fitted with a platform or box on which may be loaded a goodly stock of supplies for the out-apiary, or as much honey as is safe to load on the car in question; but do not overload. Remember that the cost of upkeep is much less on a moderately light car than on a heavy one. On the former, the tires are smaller and therefore much lower priced and the mileage per gallon of gasoline much greater.

The time gained by the use of the automobile versus the horse is an important matter with the busy man, besides the freedom from the care and anxiety which is often experienced when a horse is brought in contact with the bees.

THE COLONY, THE UNIT OF THE APIARY

A normal colony of honey bees (*apis mellifica*) consists of a queen or mother bee, several thousand workers, and during the honey season, some hundreds of drones. Each class has its respective offices and duties, and each is especially important in the

continuity of the colony and race; however, additional importance is attached to the queen through the fact that unless she is young and vigorous, her colony cannot excel in production or profit.

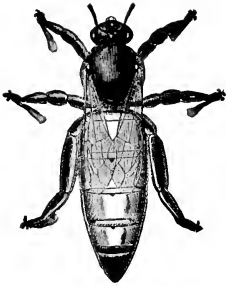


FIG. 49. Queen



FIG. 50. Worker



FIG. 51. Drone

THE QUEEN

With a colony in normal condition, the queen, a fully developed female, lays all the eggs for the maintenance and increase of the colony. Under favorable conditions, she has been known to lay 3,000 eggs per day at the height of the season, equalling her own weight, which seems almost incredible to many people.

The production of the apiary, and hence the profits realized, depend largely on the energy of this main spring of the colony. It, therefore, behooves the apiarist to bend every effort to secure this "sine qua non" to the highest success. The honey producer knows there is great variation in the yield of individual colonies, and should the indifferent ones be made as efficient as the best, his profits would be largely increased.

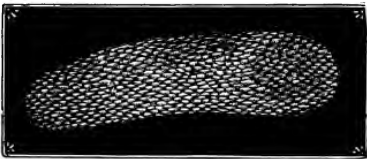


FIG. 52. Egg of a queen bee highly magnified

All queens should be bred from the very best stock obtainable, and mated to an equally good strain of drones. To maintain the requisite vigor and lessen the chances of supersedure, no queen over two years

of age should be kept. They should be replaced by young ones. The natural life of a queen is often four and occasionally five years, but a few hold out in fertility to the end. Others fail and become so-called drone layers, since they lay eggs which produce drones only. Still others are superseded by the workers by constructing queen cells over workers eggs or larvae, the old queen, in some cases, remaining in the hive until a young queen is hatched and laying. In other instances the old queen disappears suddenly, before the workers have made preparations to replace her. Under any of these conditions, the colony is more or less disorganized, and if they take place early in the season, are likely to prove a handicap.

The queen possesses a curved sting which she will use only on a rival.

WORKERS

True to name, the workers are the people of the hive who work, and furnish to their owners and all others a beautiful example of what may be accomplished by diligence and perseverance. They perform all the labor both in and out of the hive. The young build comb and feed the larvae. The older ones forage in the fields, gather the product of the hive and defend it from intruders. They must necessarily be very numerous

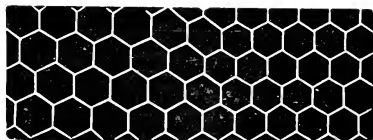


FIG. 53. Drone and Worker Comb, Drone Comb at left

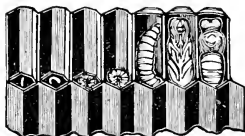


FIG. 54. Brood in different stages of development

to store honey in sufficient quantities for their own needs and afford a goodly surplus for their keeper besides. They are undeveloped females or neuters, and are equipped with a sting which they use freely for defense. When a colony becomes hopelessly queenless, a few of their number, usually called fertile workers, try to become reproducers by laying eggs. These eggs, although usually laid in worker cells, produce only drones, since

being unfertilized they can produce nothing else. Their egg laying is very irregular. Single cells often contain a dozen or more eggs. While the work of the worker bees is in the main remarkable and unapproachable, when they attempt something for which they are not qualified by nature, they make a miserable failure of it.

The difficulty of introducing a laying queen is greatly increased in a colony infested with these obnoxious laying workers.

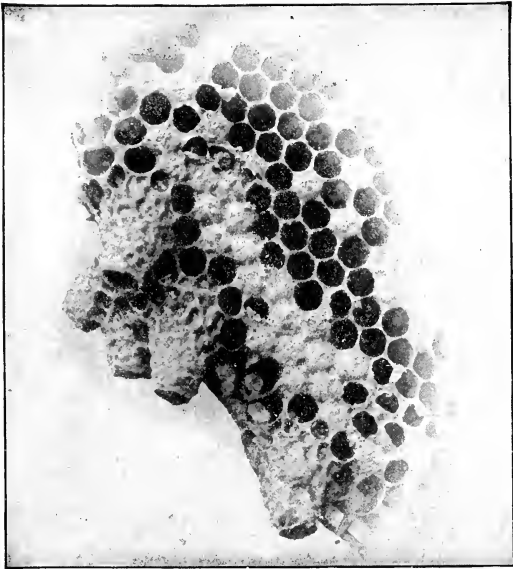


FIG. 55. Natural built queen cells, the uppermost one having hatched

DRONES

The drones are males. They are the largest bees in the hive and have no sting. They make a great deal of noise and bluster in the world, but their accomplishments are not prominently in evidence. They are typical gentlemen of leisure, enjoying the freedom of the home, living on the fat of the land, taking fre-

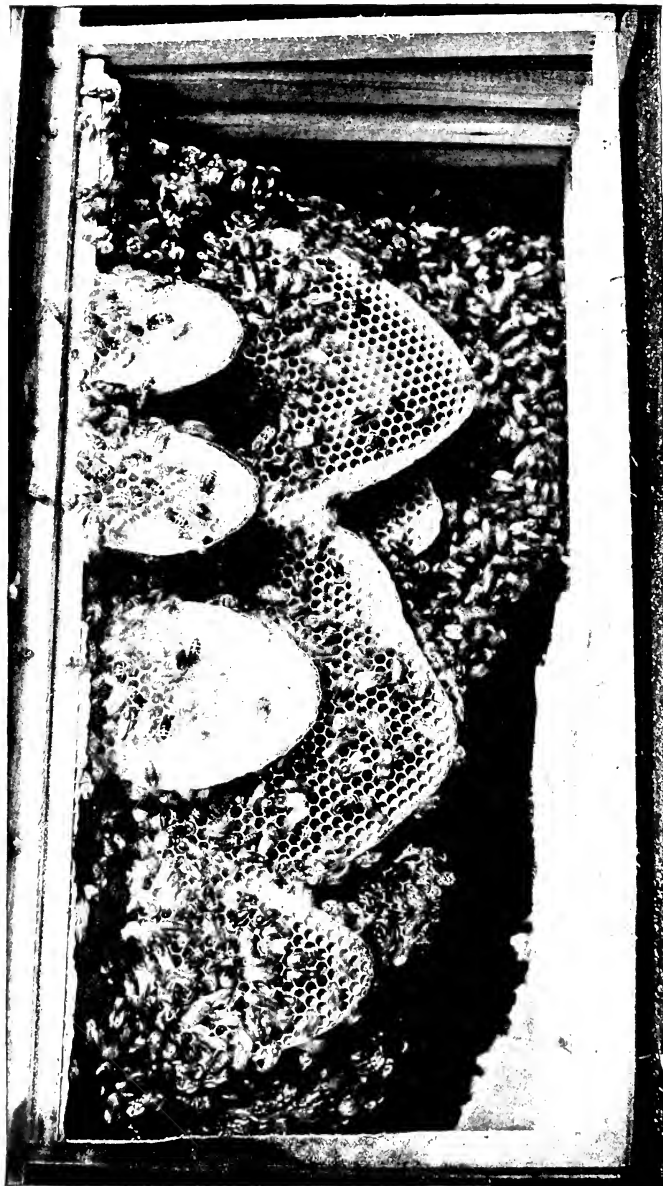


FIG 56. Bees building natural comb

quent aerial excursions and attending all the wedding functions that come their way.

In the spring of the year when a colony becomes populous from the numerous hatching bees, they commence the raising of drones preparatory to the swarming season. So long as the honey flow lasts, they are not molested, but when a dearth comes at or before the close of the season, the workers slaughter and expel them.

Colonies which have become queenless suffer the drones to remain, even after the advent of cold weather. Their presence in the hive after their general slaughter in other colonies may be taken as an evidence that something is wrong, and such colonies should receive the attention of the apiarist at once.

Except for the improvement of stock, when young queens are being reared, a large number of drones should not be tolerated in the apiary, and an excess of drone comb should be removed from the hives. Twenty square inches per hive is an abundance.

When there is a surplus of drones in the hive, or when they are of undesirable stock, a drone trap may be used at the entrance to catch them in order that they may be destroyed.

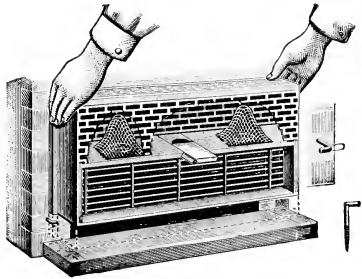


FIG. 57. Drone trap

RACES OF BEES

The black or brown German bee was the original race in this country. The Italian race was imported in 1860, since which time it has been widely disseminated. In later years the Carniolan, Cyprian, Holy land, Egyptian, Caucasian and Banat races were imported and tried out. They were weighed in the balance, and with the exception of the Italians, found wanting.

Many of the good qualities of the Italian race have long been recognized, and it is only a fitting climax that they should be and

are the greatest aid in the suppression of European foul brood. There is no known race that can stand in comparison with them in this respect.

The three banded or tan colored strains are the most desirable and in the imported stock this is the predominating color. The American bred stock frequently runs to bright yellow. No doubt the demand for this stock has had its effect upon many of the queen breeders, but there are a few breeders who have bred up a superior strain of the darker colored bees, realizing that "handsome is that handsome does." These parties are reaping good returns for the labor they have expended in this direction and are frequently unable to supply the demand for their stock.

MANIPULATION

The proper handling of bees is by no means as hazardous or difficult as many people imagine. The principal trouble with beginners is their lack of knowledge of the characteristics and habits of the bee. This creates a fear and uncertainty in their minds. They do not know just what to expect except some stings, nor what to do in an emergency. A little practice and observation in company with an experienced beekeeper would enlighten them greatly.

When it is desired to open a hive for any purpose, start a good fire in the smoker and fill with fuel. Put on a veil if desired,

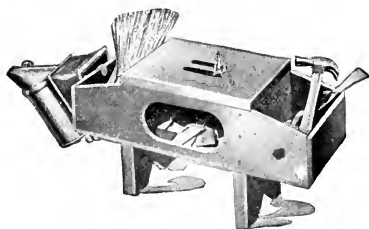


FIG. 58. A convenient tool box

get the hive tool and proceed to the hive in question. Blow a whiff of smoke into the entrance; then insert the hive tool under the cover and loosen it, blowing a little smoke under before any bees can escape. Remove the cover, giving a little more

smoke, after which the bees should be fit to handle. A little smoke may be needed occasionally, but no more should be used

than is actually needed to subdue them. Too much smoke will cause them to stampede and drop off the combs when handling, especially the blacks and hybrids. Occasionally, a colony will need an extra amount of smoke to subdue them. Queens producing such stock should be superseded as it is a nuisance to the beekeeper, if not to others, to have them around, and in some locations would prove a hazard to the business.

When handling bees, the apiarist should be stationed at the side or rear of the hive, so as to disturb the working force of the colony as little as possible.

Occasionally the life of a bee will be sacrificed in manipulating them, but care should be exercised that the number of such be reduced to the minimum.

Careless apiarists frequently kill bees by the hundred, by mashing them between hives, frames, etc., and then wonder why their bees are so cross. Perhaps nothing will arouse the anger of a colony more quickly than crushing some of their number, which besides being cruel is also unprofitable. Other causes of offense are a sudden jar of the hive or combs, quick movements, blowing the breath upon the bees, and the odor of perspiration. It is well to avoid all of these in handling and to work from the side of the hive toward which the wind, if any, is blowing.

Some amateurs handle their bees only in the morning or evening when the weather is comparatively cool, thinking that is the best and only time. Toward the middle of a warm day is a much better time for them to attempt such work, as the bees are in better mood, and many of the old bees,—which by the way, are the ones that object most to being handled—are absent in the fields.

Of course the professional apiarist with extensive apiaries must frequently handle his bees at any and all times of day, in order

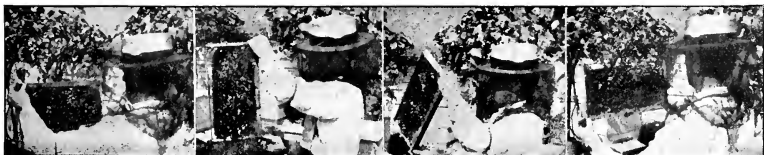


FIG. 59. Handling of frames

to accomplish his work, but his knowledge and experience will carry him safely through, while the novice might easily be worsted.

Some beginners after learning with what ease a colony in a movable frame hive may be handled are loth to give the bees a rest, when in truth they would often accomplish much better results if they were helped less.

INTRODUCING QUEENS

The safe introduction of queen bees is a very important part of the beekeeper's knowledge, especially since the advent of European foul brood and the consequent desirability of changing from the dark races and their hybrids to the Italian race. Besides, it is essential if the apiarist desires to replace queens before their natural failure. Many different methods have been employed with more or less success, a few of which are given herewith.

The strange queen is usually placed in a wire cloth cage when first put in the colony which is to receive her, always making sure that this colony is queenless and without queen cells either complete or in course of construction.

When the queens are purchased from dealers at a distance, they are as a rule put up in cages that may be used for introducing, and directions usually accompany them, by which they may frequently be safely introduced. Others prefer different styles of cages, such as "Miller's" which is thin, light and convenient for placing between combs without spreading, or in the entrance of hives.

A cage introduced by the author has been extensively used for introducing, and although given to the public more than thirty years ago, is still used successfully and practically, according to the original specifications. I quote below from the Beekeepers' Exchange of January 1881:

"Queen Cages and Introducing Queens"

"I notice in the November Exchange that friend J. A. Martin has experienced some difficulty in introducing queens with the 'Peet' cage, by the bees knawing under the cage and getting at the queen. Some others have reported favorably, but as I have

never used it, I have nothing to say, pro or con. I have, however, used a cage for introducing for three or four years past, which is applied to the surface of the comb in a similar manner. It is made thus,—take a piece of wire cloth of about ten meshes to the inch, four inches square, cut a square inch out of each corner, then bend the projecting parts at right angles to the centre, making a cage two inches square and one inch deep; then ravel out the sides one half inch in depth, leaving the wire projecting that much to press into the comb.

To use this cage, press it into the comb until the wires touch the septum or pass through it a little way, always placing it over some unsealed cells of honey.

I think there is no advantage in having brood inside of the cage, neither would I confine any workers with the queen.

With this cage there is no need of looking up a perfect comb, as it can be placed upon any comb containing honey and it is hardly possible for the bees to know into it. The combs may also be placed at the regular distance apart without interference.

When the bees are gathering honey, I usually remove the old queen and immediately replace the new one in the hive, leaving her caged twenty-four hours or so, then remove the comb and drill a hole through the cage, from the opposite side, being careful not to injure the queen. Leave the hole plugged up with broken comb and honey, and the bees will soon liberate the queen while the colony is in a state of quiet.

Whenever it is desirable to cage reserve queens, they may be confined in this way for two or three weeks, without harm.

I have tried a number of different methods and cages for introducing queens, but have as yet found none better than this."

W. D. WRIGHT, *Knoppersville, N. Y.*

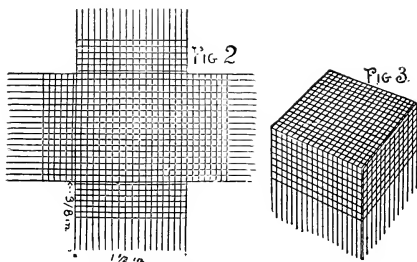


FIG. 60. Wright's Introducing Cage

The above described cage has been slightly enlarged by some; others have recommended that it be placed over hatching brood, but I have failed to discover any improvement by so doing, although this is optional with the operator. By making the cage of the depth recommended the projecting wires will just penetrate the septum and the cage containing the queen will not project above the surface of the comb enough to interfere with the spacing. Cloth woven with rather heavy wires is best, since the projecting wires are not so easily bent out of shape. When not in use, these cages are best kept in shape by meshing the projecting wires of two cages together.

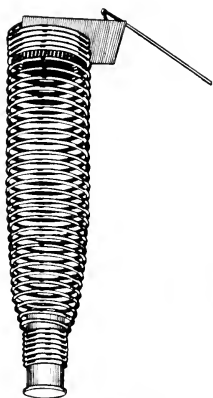


FIG. 61. Queen Cage
(Original)

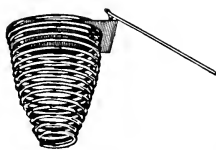


FIG. 62. Queen Cell Cage
(Original)

The "West" cage is also used for introducing queens,* and is found very useful for general use about the apiary for caging queens and queen cells during the swarming season. It is provided with a food chamber which is very convenient and safe.

Queens are best introduced during the honey flow. If it is necessary to introduce them at other times, they may be fed moderately, being careful not to induce robbing which would invite defeat of the object sought.

It is difficult to introduce a queen in a colony which has been queenless for any length of time. Many of such contain fertile or laying workers which complicate matters still more. The following is a very good method of introducing a queen to such a colony: Remove two combs from the centre of the queenless colony; then

* See Mr. West's Method, page 1499.

from the nucleus or colony containing the queen you wish to introduce, take out two combs containing bees and hatching brood, and with the queen between them, protected by her own bees, place them in the queenless hive,—close it up and leave undisturbed for a time. I have success with this plan.

At one time I had a particularly stubborn colony which positively refused to accept a queen, but I won finally by removing all of their combs and keeping them combless until they were thoroughly subdued and accepted a queen. For best results, the colony should be queenless but a few days, not more than a week at most.

Mr. C. Russell of Conesville, N. Y., an expert apiarist, has had success in introducing by caging the old queen in the cage to be used for introducing the new one, leaving her there for from twelve to twenty-four hours, then removing her and caging the new one. The object is to give the cage the scent of the old queen.

In any case, if the bees of the colony “ball” the cage—as it is called—by clustering tightly upon it and biting it, the queen must not be liberated until such demonstrations cease. Place the comb back into the hive and examine them a day or two later.

Should a queen be balled by the bees at any time, she may quickly and safely be released by dropping the ball in a pail of water, catching the queen, caging her at once and placing where desired. This works better than smoking the ball as the bees are more likely to sting the queen, particularly if the smoke is hot or even warm.

A very valuable queen may be safely introduced by placing her on two or three combs of hatching brood, placed in a hive and closed bee tight for a few days, until enough bees hatch to care for the queen, when the entrance may be opened. This brood must be kept warm in cool weather.

Queens from a distance may be clipped before introducing them to prevent their loss by flight should they have an opportunity. This may best be done inside of some building at a closed window.

FEEDING

Ordinarily, the less feeding the apiarist has to resort to the better, and in good locations, with an average season and proper manipulation, it may usually be avoided. When comb honey production is followed and the hives used are of good size — say the ten-frame Langstroth — there will usually be sufficient honey stored to carry the bees through the following winter and spring. The amount will be augmented if the bees are of the Italian race, and also if the apiary is located in a good buckwheat raising section or where other honey yielding fall flowers are plentiful. Some colonies frequently contain more honey than is needed; however such can be used to excellent advantage in equalizing with the light-weight hives, either in fall or spring as may be needed.

Where the main crop of surplus is extracted, the case is different, since the brood chamber is not over-crowded with either bees or honey, and the bees often store the bulk of their gatherings in the supers, while the brood chambers are well filled with brood. The close of the honey flow frequently finds the colonies in this condition, and unless the beekeeper wisely reserves full combs of honey for winter stores, it is often necessary to feed largely for this purpose. Some apiarists remove the surplus supers several days before the close of the flow, and thus get considerable of the honey stored in the hives.

When enough honey is not given to make up the deficiency in stores, syrup made from the best granulated cane sugar should be used. This should be composed of two parts sugar to one part water. Have the water hot, and gradually stir in the sugar until dissolved.

This should be fed as rapidly as possible during September or early October so that the bees will not commence brood-rearing. The "Miller" feeder is good for the purpose as it is large enough to contain the full amount to be fed. All colonies should be brought up to thirty pounds in weight of stores.

Some beekeepers use a five or ten pound pail as a feeder, by inverting it in a pie tin after filling and placing it in the super of the hive to be fed.

When it is desired to feed for stimulative purposes, the syrup should be made of one part sugar and one or two parts water, which need not be heated.

There are many styles of feeders used for this purpose, among which are the division board feeders used in the hive in place of one or two frames. The "Alexander" feeder fitted in the bottom board under the rear end of the hive, the "Stahlman" feeder used under cover at top of hive, inverted fruit jars, tin cans, etc.

Any waste or refuse honey which is known to be free from disease germs may be fed when the bees can fly frequently. This should be diluted by adding an equal amount of water.

Some experienced apiarists succeed well in feeding in the open air for stimulation or during shortage of honey. Some special arrangement which the bees may visit in large numbers without danger of drowning, should be provided for this purpose. They should be fed a moderate quantity each day that they are able to fly, until they can obtain a sufficiency from the fields.

The indiscriminate purchase of honey for feeding is prohibitive on account of the danger of introducing disease into the apiary.

Whatever method of feeding may be employed, it is highly essential that the robbing propensity of the bees be forestalled.

COMB FOUNDATION

Comb foundation is a modern invention of no inconsiderable importance and has become a necessity in commercial beekeeping. It is made from pure beeswax by melting and sheeting same, then embossing the sheets to imitate the septum of the natural honey comb. The size of the cell outline is also identical with that of the natural worker comb as built by the bees. This is the only size that is profitable for general use. The annual output of this product by the various manufacturers amounts to hundreds of tons.

One pound of wax as produced by the bees, requires the consumption from fifteen to twenty pounds of honey, besides much time used in construction, hence it is obvious that by furnishing them with a large proportion of this wax ready to work, much time and honey is saved.

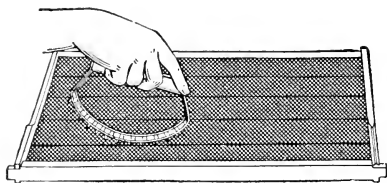


FIG. 63. Fastening foundation in wired frames

worker combs, are straighter, and by incorporating fine wire into the foundation before it is drawn out, the resultant combs are much stronger and tougher than natural ones, which is a desirable requisite for rapid handling, extracting, etc.

The saving of time and the perfect workmanship of the finished product also applies to its use in the sections used for the production of comb honey. Since the cells are all of the workers size, the surface of the capping presents a smoother and whiter appearance if full-sized sheets are used, than when natural comb is built or only starters of foundation used, in which case many of the sections will contain more or less comb of the drone size, in which a portion of the honey touches the cappings which detracts much from its salability. The artificiality of this product disappears, inasmuch as the bee herself caps the climax.

SWARMING

The natural swarming or increase of the honey bee is one of the most interesting and wonderful features of its culture to the student of nature. It also may become one of the most demoralizing and exasperating of conditions to the extensive apiarist who has failed to exercise the necessary precaution early in the season to avoid or ameliorate the conditions that naturally obtain when his colonies become populous.

With a moderate natural increase early in the season, and a long honey flow, the amount of surplus may not be materially lessened, but at the best, there is sure to be a waste of time in caring for the swarms as they issue. As is the case in some seasons, if swarming is excessive, a large yield of surplus cannot be expected.

This, however, is not the only advantage to be gained by its use. The combs built upon it are even more perfect than the natural product in that they contain more perfect cells, are all

When natural swarming is allowed, all queens should be clipped. That is, one-half or more of one or both wings should be cut off with a sharp penknife or scissors; and it is safe and best to practice this in any event, since it gives better control of the queens when they occasionally get into the air. Care must be exercised in clipping not to pinch or injure the queen in any way, and especially to avoid cutting off any of her legs, which would prove a handicap in the performance of her labors.

When a colony becomes populous in the spring, the bees commence rearing drones; later as the hive becomes crowded with bees and brood and honey is being gathered, unless preventive measures are adopted queen cells are started, and eight days later when the first cells are sealed, the prime swarm issues with the old queen, often a few drones, and the major portion of the working force of the colony. This is the rule, but as there are exceptions to all rules this one is not invariable. Inclement weather or a cessation of the honey flow may postpone the issuing of the swarm for several days and occasionally the queen cells may be destroyed and no swarm issue.

If the old colony is left undisturbed after swarming, a second swarm frequently issues, usually on the ninth day after the prime swarm and soon after the young queens hatch, one or more of which accompany the swarm.

By applying the ear to the hive on the evening or morning before the after swarms issue, the queen may be heard piping; sometimes several may be heard at once, giving different tones, some high and fine, others low and coarse. This is a pretty sure indication of swarming where there are young queens in the hive.

It is usually poor policy to allow after swarms to issue and they should be prevented by removing all queen cells except one of the largest and most mature, six or seven days after the prime swarm issues. It is also a good plan to place the prime swarm on the stand of the parent colony, moving that to a new position wherever desired. This strengthens the working force of the swarm and tends to discourage after swarming in the old colony.

Nearly always, swarms accompanied by a queen, cluster in the vicinity of an apiary on trees, shrubs or some other object, where

they remain for a longer or shorter period before leaving for a home in the woods. During this interim the bees must be hived. When the queen is clipped, she may be caged and placed with the swarm, or the old hive may be removed to a new stand, the new hive placed upon the old stand. Allow the swarm to return to that position, placing the caged queen with them and liberating her after a short time. Sometimes returning swarms will enter neighboring hives, when they should be covered with sheets to exclude them. New swarms are often loth to enter a hive filled with foundation in the middle of the day when the weather is warm, and will frequently leave it after hiving. I much prefer to hive swarms temporarily, as they issue, in empty boxes of suitable size, keeping them well shaded and ventilated until evening; then hiving them on foundation. By doing this they will usually be nicely settled before morning. Swarms may be disposed of much more rapidly in this way, with less danger of mixing up, in large apiaries.

If swarms are not desired, the hives should be well ventilated, have large entrances, more or less shade and plenty of room for storing honey and rearing brood.

ARTIFICIAL INCREASE

Some apiarists maintain that natural swarms are best, that they work with an eagerness surpassing all artificially made increase. However, with proper management and manipulation, the latter have proved to be the equal of the former in production, besides giving several distinct advantages. If the apiarist has his colonies in proper condition, he can make his increase at the beginning of the honey flow or at any time he may desire, and do it rapidly: Whereas, if he depends on natural swarming, he must spend the best part of every fair day in the apiary watching and waiting for swarms during the swarming season, which often continues from four to six weeks.

The forced swarms should be made at the commencement of the swarming season, so as to forestall swarming in the main and speedily get all colonies in condition for the honey harvest. After division, if given sufficient room for storage and proper ventilation, there is but little danger of their swarming.

Various methods of making increase have been given from time to time, but one of the best and approaching natural conditions is the following: Prepare the new hive, preferably filled with frames of wired foundation, take it to some strong colony which is to be removed from its stand and the new hive set in its place. Now remove the combs of the strong colony, keeping a watch for the queen, and shake most of the bees into or in front of the new hive until you have about two-thirds of the bees of the colony — say, five out of eight combs or six from a ten frame hive — and the queen. Replace all combs in the old hive, remove it to a new stand wherever desired and give a ripe queen cell or a laying queen after a day or two. The best time of day to operate is toward evening, as some artificial swarms, as well as natural ones, become discontented and desert their hives, but when hived at evening they usually become settled before morning. If desired, a frame of brood from the old colony may be left in the new hive to hold the bees down, replacing it with a frame of foundation.

The entrance of the old hive should be contracted for a time, as most of the old bees will join the shaken swarm.

Do not divide a colony that is not fit to swarm naturally. Many beginners who are anxious for increase, divide their colonies to such an extent that they have only a quantity of nuclei, unfit for either storing surplus or wintering.

PRODUCTS OF THE HONEY BEE

The following substances are gathered by the bees, namely: honey, pollen, propolis and honey-dew. By the consumption of more or less honey by the worker bees, beeswax is secreted and built into comb to contain honey and brood.

Honey

The correct definition of honey is this: "Honey is the nectar and saccharine exudations of plants, gathered, modified and stored in the comb of honey bees." Any substance to which this definition will not apply can not be legally labeled and sold as honey.

Honey is marketed in two forms — comb honey and extracted honey. The former name is applied to the product sold in the

comb and usually in small sections, and the latter to all honeys separated from the comb, either in liquid or granulated form.

As the principal income from the apiary is through the honey produced, it is of vital importance to the apiarist that he should produce the maximum amount, and that of the highest quality obtainable. By quality is meant the ripeness and richness of the extracted product and the most perfectly filled and whitest capped in comb honey. With the latter this requires especial care and attention at just the proper time.

Pollen

Pollen is the fertilizing dust of flowers, which is gathered by the bees and packed in solid lumps on their posterior legs for transportation to the hives. On their arrival home, they insert these legs into an empty cell or one partially filled with pollen and dislodge the lumps with their other legs and again return to work, leaving the pollen in the cell to be kneaded down flat by other and younger bees. The cells containing pollen are never entirely filled with this substance, but are frequently filled up with honey and sealed over. Pollen is usually stored in worker comb, and in queenless colonies the breeding space is often badly clogged with it. It is of many colors, depending on its source, ranging from cream to dark purple. Some flowers yield a large amount with but little honey and vice versa.

Pollen is used by the bees for the preparation of food for the larvae, and little or no brood can be reared without it or some substitute for it.

Propolis

This sticky substance is gathered from the buds of trees and shrubs, and is used by the bees for cementing the crevices and covering up rough places in the hive. In sections where it is plentiful, they frequently use large quantities of it, and daub it over the inside of the hives and sections quite freely. In such cases it proves to be a nuisance, since it interferes with the handling of frames, and largely increases the labor of preparing comb honey for market. Where propolis is somewhat scarce, the bees often mix wax with it, and occasionally use pure wax as a cement; especially is this the case early in the season. Late in the season the

hands often become soiled with this gum which is somewhat difficult to remove, but by using oil or grease, then soap, it is made easier. Lava soap used alone is very effective.

Honey-dew

This substance is secreted and discharged by the aphids, or plant louse. It is occasionally gathered freely by the bees, and if stored in their hives in any quantity for winter food, is a sure harbinger of trouble for the apiarist. If possible it should be extracted from the combs and good honey or sugar syrup fed for winter stores. Where bees are long confined with much honey-dew for food, the mortality is unusually great. This stuff is unfit for sale, and is only useful to feed bees in warm weather when they may have frequent flights. It is usually of a dark color and rank flavor.

Beeswax

Although the production of beeswax in this country is somewhat limited, it is still a very important product of the honey bee. For many years it has been prominent as an article of commerce and is always in demand, the price fluctuating slightly at different seasons of the year.

There are mineral and vegetable waxes known to commerce: Each have their uses, but their values are much lower, as they are for many purposes much less efficient and effective than beeswax. For certain purposes no other substance can compare with it.

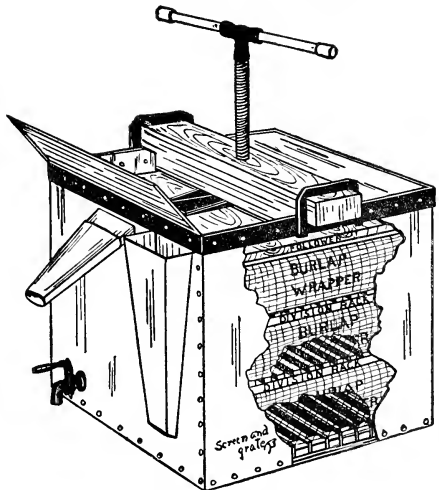


FIG. 64. Hershiser wax press

Large quantities of beeswax are consumed in the manufacture of wax candles, in the dental profession and in other arts and crafts.

Beekeepers themselves are becoming extensive users of this product, and it appears reasonable to expect an advance in price with the coming years on account of the increasing demand.

Beeswax is produced at much expense to the apiarist as it is a well-known fact that the bees consume from ten to twenty pounds of honey to secrete one pound of wax.

The waxen combs of the bee are indeed a wonder. With its God-implemented instinct and without square, level or compass, the bee produces a work that is nearly perfect for the purpose required; namely, for the storage of honey and rearing of brood, for the maintenance of the colony.

The apiarist should carefully gather all fragments of comb and wax that are removed from hives, frames, etc., in apiary work. These may be melted in a solar wax extractor or otherwise. In rendering old combs into wax, if done in quantity, it will probably pay to secure a good wax press, as that is about the only way in which practically all the wax may be secured.

SHALL THE BEEKEEPER PRODUCE COMB OR EXTRACTED HONEY?

This question must be decided by each individual for himself, depending as it does on the circumstances of the case.

Some sections are better adapted to the production of comb honey than others, especially where there is a long, continued flow of clover or other white honey. Again the apiarist, if following the occupation for recreation, may prefer this for æsthetic reasons since more time and skill is required to produce it, and the result is more artistic and beautiful.

It has been frequently claimed that comb honey is a luxury — hence the demand is somewhat limited, and consequently the price can not be advanced to any extent. If such be the case, let it take its place beside other luxuries and make the price such that it may be produced at a good profit. The people who purchase luxuries *will* have them and pay the price whatever it may be.

Extracted honey while just as healthful and good as an article of food, can be produced and sold more cheaply and will be pur-

chased by the masses in preference to comb honey in many cases, especially where the latter is considered too high priced.

One cause for the exodus of beekeepers from the comb honey producing ranks is the lack of proper remuneration for the time, labor and expense involved in the production and marketing of this article. An annual outlay for sections, comb foundation, shipping cases, carriers, etc., is required, also extra time and labor in preparing the same for use, and preparing the crop for market. The extra cost for freight rates and risk of breakage in transit all figure against the low prices of the past on comb honey.

On the other hand, in producing the extracted article a greater yield can usually be obtained; in some cases, and under certain conditions, probably double the amount. The amount of labor and expense is reduced; the cost of containers or packages is less, and same may be shipped with comparative safety. Also, the crop is ready for market when harvested. An apiary run solely for extracted honey is more easily controlled, and the difference in the price of these commodities being at present comparatively small, the apiarist will be able to determine which product most appeals to him.

COMB HONEY PRODUCTION

The successful production of comb-honey requires much more skill and labor than the production of an equal amount of extracted honey, therefore it behooves the apiarist who desires to secure the former to adopt only the most effectual methods and approved devices.

The hive should not be too deep, else there will be too much honey stored between the brood and supers. It must afford a large surface above the frames giving a surplus capacity of thirty-five to forty pounds in a single tier.

In a good season, a strong colony would fill a forty-pound super as quickly as one of twenty or twenty-five pounds' capacity, making a difference of twenty-five to forty per cent. in yield on this item alone.

Some apiarists have been successful in using twin supers, that is two abreast, but I prefer a single super as being more simple

and quicker to handle. They should admit of tiering up when desired, with free communication between same.

A pound-section, so-called, is most desirable, preferably four by five inches in dimension, this shape being handsomer in appearance and more readily salable than a square one. The Danzenbaker section, I consider O. K., and when used plain, in connection with the fence separator, makes a neat outfit; however, I use and prefer a slotted separator and bee-way sections. The plain separator is less expensive, more durable and easier to clean. These are one-eighth inch thick and dressed on both sides. I nail a separator in one end of the super and another one on the follower, thus giving a passage-way from the hive to the outside of the end sections, which facilitates the finishing of them.

I would recommend using full sheets of thin super foundation in all sections, thereby increasing the yield greatly, besides getting straighter and smoother combs. Leave one-fourth of an inch space at bottom of foundation in a section five inches in height to give room for sagging and to prevent buckling. Some apiarists recommend using extra thin super foundation, but as it is liable to sag in hot weather, and is sometimes torn down by the bees during a scarcity of honey, I prefer the "thin" only. I have received no complaint in regard to what is usually called "fish-bone" in comb honey, caused by the use of foundation with heavy septum.

Bottom starters may possess some advantages, but I have never felt the need of them, consequently have never used them. They certainly require more labor and I have endeavored to secure the maximum quantity of surplus of good quality with the least expenditure of time and money.

Examine all colonies early in the season, to ascertain if they have good prolific queens, and plenty of honey to foster brood-rearing. Then they will increase their brood as fast as they can care for it. The apiarist who gets anxious to assist bees in this process and spreads the frames of brood, often finds it a delusion and a snare.

The apiarist must decide whether he will allow a moderate increase before the principal honey flow, or prevent it altogether, and turn the entire working force into the supers.

At the commencement of the honey flow, place supers on all colonies that are in a suitable condition and continue with the others as fast as they come into condition. If the colonies are populous, with honey flow, and weather conditions right, place an empty super under the first when the bees commence sealing in the same. Follow this plan up as long as advisable, but do not carry it too far, so as to have a lot of unfinished sections at the close of the season.

The last supers given toward the close of the flow, or when the bees are working moderately, should be placed above those nearly filled, and dropped to the hive when the latter are removed.

Remove the surplus as soon as the combs are sealed, to preserve the whiteness of the cappings.

Store the surplus in a dry and warm building until ready for market. Clean the sections of all propolis, grade it nicely and pack it in clean crates.

THE PRODUCTION OF EXTRACTED HONEY

When the colonies become populous and the honey flow is near, and before preparation has been made for swarming, supers containing empty comb or foundation should be placed on them with a queen excluder intervening. When these supers are two-thirds filled, another may be added — and so on to the end of the flow. This will tend to discourage swarming and the honey will be well ripened by remaining on the hive. Where the crop is secured from different sources and is of varying colors or grades which it is not desirable to mix, the supers should be removed and honey extracted and then replaced for the next flow. This is especially applicable to buckwheat growing regions.

Extracted honey may be and is frequently produced with but one super to each colony; however, it is then sometimes necessary in a flush yield to remove the honey before fully ripe, and ripen artificially in tanks or other receptacles, which is not always satisfactory. Besides, the extracting must be done more frequently and the colonies are much more apt to become overcrowded without close attention.



FIG. 65. The proper manner of brushing bees from comb with the German bee brush



FIG. 66. Manner of using the Coggs hall bee brush

All hives should be well ventilated, and should have large entrance room. In removing the combs for extracting, the quickest method is to take them from the supers and shake the bulk of the bees at the entrance and brush the balance off quickly with a Coggschall or German bee brush as shown in the accompanying illustrations. Place them in another super on a wheelbarrow or other vehicle and cover up bee-tight if there is any danger of robbing. Do not continue this work too long at a time when robber bees bother. At such times the supers may be removed to good advantage with bee escape boards. At times much of the work may be done during early morning or late evening to evade robbers. As soon as a load is obtained, hurry it into the extracting room or other safe place.



FIG. 67. Board containing
bee escape

Secure a good, modern, reversible honey extractor to remove the honey from the combs, and if to be done in an extensive way, it will pay to get a four, six or eight-frame, power-driven extractor. This outfit will keep two hands uncapping while one does the extracting. For uncapping the combs, nothing surpasses Root's steam uncapping knife. When properly manipulated this is always in condition for slicing off cappings, and a capping melter may be used to uncap in if desired. A very good and cheap method of disposing of the cappings is by using a sugar or cracker barrel with holes bored in the bottom, and secured in a wash tub to catch the dripping honey, as recommended by the late W. Z. Hutchinson. When most of the combs are sealed, a nice lot of wax may be obtained from the cappings. The combs in the supers should be spread somewhat, using eight or nine in a ten-frame body so that the combs may remain of the usual thickness after they are uncapped.

The honey may be drawn from the extractor in pails and emptied through suitable strainers into tanks, or where convenient, carried by gravity, or pumped by a rotary pump driven by the

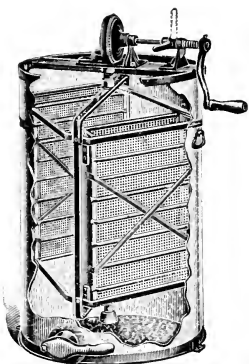


FIG. 68. Cowan reversible extractor



FIG. 69. Root's steam uncapping knife



FIG. 70. Bingham improved uncapping knife

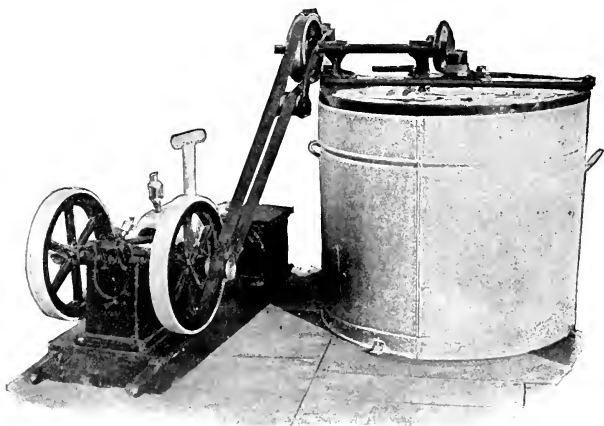


FIG. 71. Root's reversible power honey extractor

engine. It should be allowed to stand and settle a short time in the tanks, when it may be skimmed and drawn off through a gate into tin cans or wooden kegs. It is very convenient to have these vessels stand on a scale with an electric bell attachment to warn when filled.

Some extensive producers having out-apiaries are provided with an extracting outfit at each apiary; others bring the supers to the home apiary to extract, and still others transport the outfit from place to place.

MARKETING HONEY

Honey is usually marketed during the fall months; probably the bulk of it in September and October. If a large quantity is put on the market early in the season it may give a false impression as regards the size of the crop, and possibly depress prices.

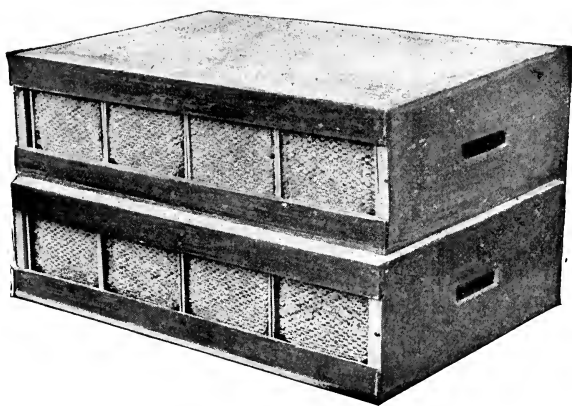


FIG. 72. Comb honey in shipping case

All packages for comb honey should be clean and neat and all propolis and stains well cleaned from the sections. These should be packed in nice cases holding twelve or twenty-four sections each, with one glass side. Mark the net weight on each case and when to be shipped some distance, place six to nine cases in a special carrier well packed in straw or similar substance at

bottom to form a cushion or shock absorber. These carriers are provided with projecting handles for safety in handling.

It is well to place a warning notice on each carrier, showing the proper position of same in relation to the locomotive of train, bow of boat, etc.

It is essential that the honey be carefully graded and uniform throughout the case if the best price is to be obtained and the producers' reputation for integrity maintained.

The marketing of the extracted product is a much more simple matter. The principal point is to have a first class article well-ripened and of good flavor.

In many localities honey producers have established a fine retail trade in their own neighborhood and disposed of a part or all of their crops at good prices, and there is no doubt that many another beekeeper could do likewise by making the proper effort; thus not only finding ready sale for their product and increasing their income by the advance over wholesale prices, but also extending the use and increasing the consumption of this healthful sweet.

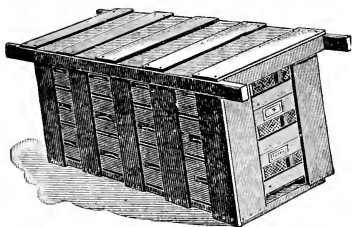


FIG. 73. Comb honey cases packed in carrier for shipment

THE WINTERING OF BEES

In this northern climate the safe wintering of bees is an important problem and a topic of interest to every honey producer.

Some apiarists of this state winter their bees successfully on their summer stands, but probably a large majority believe in the protection of some indoor repository, mainly cellars. Cellars used for this purpose should be moderately warm with no danger of freezing. The temperature may be kept at from forty to fifty degrees, and sufficient ventilation should be provided to keep the

air fresh at all times. A warm cellar in which a large number of colonies are stored, might have a window left open all winter by packing same properly so as to exclude light. The hives should also be ventilated more or less, depending on the temperature of the repository. The bees should be kept in the dark and quiet; the hives supported from the ground or bottom only, having no connection with upper floors, to avoid the transmission of jars. A boiler or furnace in a cellar where bees are wintered is not objectionable; in fact it may often prove to be advantageous by improving ventilation and furnishing additional warmth.

Where a good cellar is not available for the purpose, one may be constructed cheaply in a bank or practically above ground by setting up posts and using timbers or poles for a frame work, covering these with cheap lumber, then banking well with earth to the plates and covering over the top with sawdust one or two feet deep, with a cheap roof over all. Such a cellar will meet the required needs as well as the most expensive one.

In this latitude the bees should be housed in November and replaced upon summer stands in March or April, depending on the weather conditions. A bright, warm day should be chosen for this purpose as it is very essential that their first flight be successfully accomplished, since their future welfare depends much upon it. It has been recommended to place hives on the same stands that they occupied the season before, but this is unimportant.

Be sure that rats and mice are excluded from the cellar, also from hives wintered out, as they would cause havoc among the bees and comb.

When bees are wintered out-of-doors they should be in a sheltered location and protected by a packing of leaves or straw at back and sides of hive—the front may be exposed if facing south. Cover the packing to keep out wet. Of course if they are in double or winter hives, this precaution is unnecessary.

If well wintered there is little danger of spring dwindling. The tops of the hives may be made tight to retain the natural heat of the colony, and the entrance reduced to actual necessity for the size of the colony. See that they contain plenty of stores for the bees and brood and handle them but little until settled warm weather.

ENEMIES OF BEES

The Wax Moth

In reality, this is more an enemy of the beekeeper than of the bees, since by keeping all colonies strong, especially if they be of the Italian race, but little damage can be done them by this pest. The trouble comes, however, by the moths hatching in the combs when unprotected by bees, and in hot weather they multiply very rapidly. The apiarist who has a stock of combs on hand, probably stored away where he considers them perfectly safe, had better watch them closely. If these combs have been exposed to a freezing temperature for some time and moths or bees have not had access to them since, the probability is that they will remain free as long as thus protected.

After moths have commenced hatching in combs they may be destroyed by fumigating with sulphur, by piling hives containing them in a small room and filling the room with the fumes. The hives should be set upon something to keep them above the floor, and at least partially opened below the bottom.

When these empty combs are not too numerous they may be protected by hanging them up in the open and placing them an inch or two apart.

There is much value in a stock of good empty worker combs, but they should be utilized as soon as practicable, as they are never safer than when covered with bees.

The above refers to the greater wax moth, the larva of which is often an inch in length and easily recognized.

There is also another variety that frequently infests the combs of the honey bee; namely, the lesser wax moth. However, the ravages of this variety are seldom very serious, and may be treated in the same manner.

Rats and Mice

Where these vermin have access to bees, honey or combs, they cause serious havoc, and a vigorous warfare should be maintained against them. They are a perfect nuisance, and frequently cause so much disturbance to bees in winter repositories that they cause a greater consumption of honey by the bees, and in general interfere with their successful wintering. There is little excuse for their presence, since by proper effort they may be eradicated.

Skunks

In some sections these animals are quite numerous and when this occurs in the vicinity of an apiary, they usually pay visits to it. Their method of procedure is to disturb the bees by pawing or scratching on the hive and alighting board, which brings the bees out to investigate, when they are promptly devoured by Mr. Skunk. A remedy is to place poison into an egg and leave in the apiary at night; or they may be trapped or shot.

DISEASES OF BEES

EUROPEAN FOUL BROOD

Prevalence

The prevailing bee disease in this state is supposed to have originated in Schoharie County, about the year 1895, and spread with such rapidity as to cause fearful havoc among the bees of that county, completely destroying many large apiaries. The infection has also extended to adjoining counties. It has been controlled and in some cases suppressed in these counties, but it now appears from time to time in several parts of the state. The combined energy and perseverance of the inspectors and of all beekeepers in the infected districts will be necessary to abate this scourge.

Cause

The disease is caused by the presence of a specific germ known at present as *Bacillus pluton*, according to the best authority, which is present in this disease, and which develops in the larva, usually resulting in death in the larva stage.

Appearance

The healthy larva are of a pearly whiteness and lie curled around the bottom of the cells, but when attacked with this disease they change to a yellowish tint and occasionally show a small black dot on the upper side; dying, they settle down to the lower side of the cells and continue to grow darker in color until brown or black, emitting a sickening odor.

The Bacillus and Its Spores

Later in the life history of the bacilli, spores are produced. These form the resting stage of the bacilli and may be compared to the seed of higher plants that are ready to germinate as soon as they are placed in suitable ground. These spores are innumerable and cover to a greater or less extent the combs, frames and every portion of the inside of the hive, including honey and pollen; therefore, if any honey, comb, etc., from diseased colonies come in contact with same in healthy colonies, they would probably contract the disease. There is also great danger of contamination through robbing.

Caution

It is hoped that beekeepers will realize the necessity of exercising great care in dealing with this disease. It should be as vigorously treated as a case of smallpox or yellow fever in your own family, and it requires as thorough disinfection. Carelessness or negligence in handling or treating will be sure to cause the spread of the disease in your own and neighboring apiaries. Do not tolerate any weak colonies in your own apiary, as they are liable to be robbed out when honey is scarce in the fields. If they are diseased, the best and safest way will be to kill the few bees remaining, at evening, by brimstoning and afterward burning the combs, frames, quilts, bees, etc. Dispose of all honey, combs, brood, etc., immediately after treating diseased colonies, or any that may have died, as you are never safe with any of these standing around. "Delays are dangerous," especially so in this case.

Always disinfect the hands, tools, etc., after handling infected colonies, by washing in a solution of carbolic acid, using one tablespoonful of pure acid, either liquid or crystals, to one quart of water; or a five per cent solution of formalin is possibly better.

Management

This disease is more pronounced early in the season when the bees are breeding heavily, than later, when it frequently abates to some extent. The removal of the queen from a diseased colony is always a check to the disease and can often be used to advantage in handling it.

Always treat the disease at evening or about sundown, seeing that no stray bees enter healthy colonies. If you have good hives they may be saved and used again, but in no case try to save any of the contents unless there is much honey or wax, which can be saved by cutting out and boiling thoroughly for one hour. It will be well to add a little water to the honey to prevent burning. Do all handling of honey, etc., under cover, where no bees can gain access to it. Do not buy any honey for feeding, as there is great danger of getting that which is infected; the sugar feed is safest.

Do not exchange combs or supers from hive to hive in apiaries affected with the disease.

Prompt Action Essential

It is expected that you will treat promptly all stocks marked by the inspector as diseased, and any others which may show the disease later on, that he may not be compelled to resort to more stringent measures.

Treatment

Good results have been attained in the past by treatments here given, and many badly diseased apiaries cured, and the owners have a feeling of security and satisfaction heretofore not enjoyed by them. *The Italian race of bees is regarded more nearly immune than other races from this disease*, and it is recommended that all apiaries in or dangerously near diseased territory be Italianized.

The best time to affect a cure is during a honey flow at any time after the commencement of white clover bloom.

If stocks are weak to medium, unite a sufficient number to make them as strong as a good prime swarm.

In any treatment, when confinement of the bees is prescribed, they may be placed in cheap, light boxes of sufficient size, say a bushel or more, or, if preferred, in the old hives before disinfection. Be sure that they are bee tight. Cover one of the largest sides with wire cloth. In re-hiving place them in new, clean or disinfected hives.

In any of the several treatments herein given, the use of foundation starters in the primary treatment is optional. When re-hiving the bees they may, if preferred, be placed upon starters instead of full sheets of foundation.

In rendering wax from diseased colonies never use a sun extractor, but subject to heat for one hour or more over the stove.

Some recommend as quite important the introduction of a new queen at the time the bees are removed from the old comb, caging the queen for several days. Be sure that she is reared in a healthy colony, away from all infection, and she should be of the Italian race.

Treatment Number One

Shake off or drum out all the bees of the diseased colony, place them in empty hives on the old stand for three or four days, then re-hive them in new or disinfected old hives.

It is well and perhaps best to use frames containing foundation starters at the first, and full sheets at the last shaking, melting up the starters by boiling into wax. The old hive may be used without disinfection if desired, at the first shaking. In treating colonies it is always safest to shade them for several days, from the direct rays of the sun, and to ventilate them well, as the bees will be less inclined to abscond. If desired, a queen excluder may be placed on the hive to retain the queen. It is also well to have the queens clipped.

Fair success has been obtained by shaking but once, but should the disease reappear it will be necessary to repeat the operation.

When diseased colonies have a large amount of brood at time of treatment, it may be placed together in a hive after the bees are shaken off, and set over a weaker diseased colony, or several hives of this brood may be tiered up over one colony and shaken later, when the brood has mainly hatched — say in two weeks. Care must be taken, however, that no robbing from these combs occurs. Also, contract the entrance well.

Treatment Number Two

Colonies that are found to be diseased too late in the season to treat by the aforesaid method, may, after brood rearing has ceased, be shaken off of their combs on to full combs of honey that are positively free from all infection.

If it is desired to disinfect the old hive it may be done in the following manner:

Paint the entire inner surface of the hive with kerosene oil, fire the same and allow it to burn until the surface is blackened, then throw half a cup of water into the burning hive and quickly put a cover on, which will instantly extinguish the flames.

AMERICAN FOUL BROOD

This disease differs materially from the foregoing, being less malignant and more easily controlled; inasmuch as it spreads less rapidly, however, it is not to be trifled with, as it is also contagious and devastating when neglected. It exists in some sections of this state, also at various points throughout the United States and Canada.

Bacillus alvei is not found in this disease, but instead a bacterium recently named *Bacillus larvae*. The dead larva are at first of a light chocolate color, but gradually turn to a very dark brown, forming a thin scale on the lower side of the cell which is very tenacious and seldom removed by the bees. Before the dead larva dry out they consist of a viscous or ropy fluid which may be drawn out of the cell several inches without breaking. There is also a rank odor present in the hive at this stage of the disease.

In this disease fewer of the larva die before the cells are capped. The capping of these cells when containing dead larva are more or less sunken, of a darker shade and often perforated.

In either form of foul brood, the capped cells are usually scattering, presenting a mottled appearance of the comb, which is a striking characteristic of the disease, on opening a colony in which it is well advanced. At this stage the adult bees are also rather listless and apparently discouraged.

The same treatment and management is recommended as that given for European foul brood. Treatment number one should be followed in this disease.

PICKLED BROOD

This is a peculiar disease of the larva which causes death at about the time of capping of same; sometimes just before.

At this time they are of a light brown color, and have a distended, dropsical appearance.

The skin is rather tough and filled with a watery fluid. The larva usually lie on their backs and lengthwise of the cells, both ends sharply pointed, sometimes having black heads. There is but little if any odor in this disease. The cause is yet undetermined. It is not considered a contagious disease, nor very serious in its effects. In ordinary cases, the bees readily clean out the dead larva a little later.

PALSY OR PARALYSIS

This is a disease of the adult bees only. Often only a few scattering colonies in an apiary will be affected by it, but there are cases on record where whole apiaries have been thus affected. As

there is a constant drain on the adult bees, there is but little if any profit from such colonies for that season.

The diseased bees present a shiny or greasy appearance, as most of the hair on the thorax has disappeared, having probably been removed by other bees in biting and teasing them. Their abdomens are often greatly distended. They also often shake and stagger about, finally leaving the hive, either of their own accord, or through expulsion by the healthy workers of the colony. They drop at the hive entrance, sometimes by hundreds, some crawling about over the ground until they finally disappear.

The cause of this disease is unknown.

Many remedies have been tried and failed. Perhaps the best one is to remove the old queen and substitute a healthy one.

NO NAME DISEASE

The writer has observed in several cases, large numbers of young bees deserting the old colony, crawling about and dying on the ground around the hives, but was unable to find a cause, as the colony contained honey and appeared normal in every other respect, hence cause and remedy unknown.

PROVISIONS OF THE AGRICULTURAL LAW RELATING TO DISEASE AMONG BEES

§ 300. **The prevention of disease among bees.**—No person shall keep in his apiary any colony of bees affected with a contagious malady known as foul brood or black brood; and every beekeeper when he becomes aware of the existence of either of such diseases among his bees, shall immediately notify the commissioner of agriculture of the existence of such disease.

§ 301. **Defining honey.**—The terms “honey,” “liquid or extracted honey,” “strained honey,” or “pure honey,” as used in this article shall mean the nectar of flowers that has been transformed by, and is the natural product of the honey-bee, taken from the honeycomb and marketed in a liquid, candied or granulated condition.

§ 302. **Relative to selling a commodity in imitation or semblance of honey.**—No person or persons shall sell, keep for sale, expose or offer for sale, any article or product in imitation or semblance of honey branded as “honey,” “liquid or extracted honey,” “strained honey” or “pure honey” which is not pure honey. No person or persons, firm, association, company or corporation, shall manufacture, sell, expose or offer for sale any compound or mixture branded or labeled as and for honey which shall be made up of honey mixed with any other substance or ingredient. There may be printed on the package containing such compound or mixture a statement giving the ingredients of which it is made; if honey is one of such ingredients it shall be so stated in the same size type as are the other ingredients, but it shall not be sold, exposed for sale, or offered for sale as honey; nor shall such compound or mixture be branded or labeled with the word “honey” in any form other than as herein provided; nor shall any product in semblance of honey, whether a mixture or not, be sold, exposed or offered for sale as honey, or branded or labeled with the word “honey,” unless such article is pure honey.

§ 303. **Duties of the commissioner.**—The commissioner of agriculture shall immediately upon receiving notice of the existence of foul brood or black brood among the bees in any locality, send some competent person or persons to examine the apiary or apiaries reported to him as being affected, and all the other apiaries in the immediate locality of the apiary or apiaries so reported; if foul brood or black brood is found to exist in them, the person or persons so sent by the commissioner of agriculture shall give the owners or caretakers of the diseased apiary or apiaries full instructions how to treat said cases. The commissioner of agriculture shall cause said apiary or apiaries to be visited from time to time as he may deem best and if, after proper treatment, the said bees shall not be cured of the diseases known as foul brood or black brood then he may cause the same to be destroyed in such manner as may be necessary to prevent the spread of the said diseases. For the purpose of enforcing this article, the commissioner of agriculture, his agents, employees, appointees or counsel, shall have access, ingress and egress to all places where bees or honey or appliances used in apiaries may be, which it is believed are in any way affected with the said disease of foul brood or black brood or where it is believed any commodity is offered

or exposed for sale in violation of the provisions of this article. No owner or caretaker of a diseased apiary, honey or appliances shall sell, barter or give away any bees, honey or appliances from said diseased apiary, which shall expose other bees to the danger of said diseases, nor refuse to allow the said commissioner of agriculture, or the person or persons appointed by him to inspect said apiary, honey, or appliances, and do such things as the said commissioner of agriculture or the person or persons appointed by him shall deem necessary for the eradication of said diseases. Any person who disregards or violates any of the provisions of this section is guilty of a misdemeanor and shall be punished by a fine of not less than thirty dollars nor more than one hundred dollars, or by imprisonment in the county jail for not less than one month nor more than two months, or by both fine and imprisonment.

LAWS RELATING TO WEIGHTS AND MEASURES, AFFECT- ING THE SALE OF HONEY

CHAPTER 20 OF THE CONSOLIDATED LAWS—GENERAL BUSINESS LAW

Article 2 as amended by Chapters 187 and 470 of the Laws of 1910.

ARTICLE 2.

§ 2. Description of weights and measures.—The standard weights and measures that were furnished to this state by the government of the United States, in accordance with a joint resolution of congress, approved June fourteenth, eighteen hundred and thirty-six, and consisting of one standard yard measure and one set of standard weights, comprising one Troy pound, and nine avoirdupois weights of one, two, three, four, five, ten, twenty, twenty-five and fifty pounds respectively: one set of standard Troy ounce weights, divided decimally from ten ounces to the one ten-thousandth of an ounce; one set of standard liquid capacity measures, consisting of one wine gallon of two hundred and thirty-one cubic inches, one-half gallon, one quart, one pint and one-half pint measure; and one standard half bushel, containing one thousand and seventy-five cubic inches and twenty one-hundredths of a cubic inch, according to the inch hereby adopted as standard, and such new weights, measures, balances and other apparatus as may be received from the United States as standard weights, measures, balances and apparatus in addition thereto or in renewal thereof as well as such weights, measures, balances and apparatus as may be added by the state department of weights and measures and verified by the national bureau of standards shall be the standard of weights and measures throughout this state. (Amended by Laws of 1910.)

§ 4. Units of weight.—The units or standards of weight from which all other weights shall be derived and ascertained, shall be the standard weights designated in this article. The hundred-weight consists of one hundred avoirdupois pounds and twenty hundred weight are a ton. In all transactions relating to the sale or delivery of coal two thousand avoirdupois pounds in weight shall constitute a legal ton. (Amended by Laws of 1910.)

§ 5. Units of capacity.—The units or standards of measure of capacity for liquids from which all other measures shall be derived and ascertained shall be the standards designated in this article. The barrel is equal to thirty-one and one-half gallons and two barrels are a hogshead. The parts of the liquid gallon shall be derived from the gallon by continual division by the number two, so as to make half gallons, quarts, pints, half pints and gills. The peck, half peck, quarter peck, quart, pint and half pint for measuring commodities which are not liquids shall be derived from the half bushel by successively dividing that measure by two. The standard of measure for buying and selling strawberries, raspberries, blackberries, currants, gooseberries, plums, cherries, cranberries and other small fruits shall be the quart, which shall contain when even full sixty-seven and two-tenths cubic inches; the pint, which when even full shall contain thirty-three and

six-tenths cubic inches; the half pint, which when even full shall contain sixteen and eight-tenths cubic inches; multiples of the quart, which when even full shall contain like multiples of sixty-seven and two-tenths cubic inches.

ARTICLE 26.

§ 390. **Marking canned goods.**—No packer or dealer in hermetically sealed, canned or preserved fruits, vegetables or other articles of food within this state, excepting canned or condensed milk or cream, shall sell or offer the same for sale for consumption within this state, unless the cans or jars containing the same shall have plainly printed upon a label thereupon, with a mark or term clearly indicating the grade or quality of the articles contained therein, the name, address and place of business of the person or corporation canning or packing them, or the name of the wholesale dealer in the state selling or offering the same for sale, and the name of the state, county and city, town or village where packed, preceded by the words “packed at.”

If containing soaked goods or goods put up from products dried or cured before canning, there shall also be printed upon the face of such label in good legible type, one-half of an inch in height and three-eighths of an inch in width, the word “soaked.”

Goods imported from foreign countries of foreign manufacture shall not be subject to the provisions of this section.

Any person violating any of the provisions of this section shall forfeit to the city, village, or town where the violation occurs, the sum of fifty dollars, if a retail dealer, and the sum of five hundred dollars, if a wholesale dealer or packer.

CHAPTER 40 OF THE CONSOLIDATED LAWS—PENAL LAW

ARTICLE 40.

§ 421. **Untrue and misleading advertisements.**—Any person, firm, corporation or association, or any employee thereof, who, in a newspaper, circular or other publication published in this state, knowingly makes or disseminates any statement or assertion of fact concerning the quantity, the quality, the value, the method of production or manufacture, or the reason for the price of his or their merchandise, or the manner or source of purchase of such merchandise or the possession of rewards, prizes or distinctions conferred on account of such merchandise or the motive or purpose of a sale, intended to give the appearance of an offer advantageous to the purchaser which is untrue or calculated to mislead, shall be guilty of a misdemeanor.

Any person, firm, corporation or association or any employee thereof who violates any provision of this section shall be liable to a fine of not less than twenty-five nor more than one hundred dollars for each offense.

§ 434. **Concealing foreign matter in merchandise.**—A person who, with intent to defraud, while putting up in a barrel, bag, bale, box, or other package, cotton, hops, hay, or any other article of merchandise whatever, usually sold by weight in such packages, places or conceals therein any other substance or thing whatever, in a case where special provision for the punishment thereof is not otherwise made by statute, is guilty of a misdemeanor.

§ 435. **False labels.**— A person, who, with intent to defraud: 1. Puts upon an article of merchandise, or upon a cask, bottle, stopper, vessel, case, cover, wrapper, package, band, ticket, label, or other thing, containing or covering such an article, or with which such an article is intended to be sold, or is sold, any false description or other indication of or respecting the kind, number, quantity, weight or measure of such article, or any part thereof, or the place or country where it was manufactured or produced or the quality or grade of any such article, if the quality or grade thereof is required by law to be marked, branded or otherwise indicated on or with such article; or,

2. Sells or offers for sale an article, which to his knowledge is falsely described or indicated upon any such package, or vessel containing the same, or labeled thereupon, in any of the particulars specified; or,

3. Sells or exposes for sale any goods in bulk to which no name or trade-mark shall be attached, and orally or otherwise represents that such goods are the manufacture or production of some other than the actual manufacturer or producer, in a case where the punishment for such offense is not specially provided for otherwise by statute,

Is guilty of a misdemeanor.

§ 436. **Using false marks as to manufacture.**— A person, who, with intent to defraud or to enable another to defraud any person, manufactures or knowingly sells or causes to be manufactured or sold, any article, marked, stamped or branded or incased or inclosed in any box, bottle or wrapper, having thereupon any engraving or printed label, stamp, imprint, mark or trade-mark which article is not the manufacture, workmanship or production of the person named, indicated or denoted by such marking, stamping or branding, or by or upon such engraving, printed label, stamp, imprint, mark or trade-mark, is guilty of a misdemeanor.

PRELIMINARY REGULATIONS AND REQUIREMENTS UNDER CHAPTER 81 OF THE LAWS OF 1912.

Under the provisions of chapter 81 of the Laws of 1912 commodities must be sold by weight, measure or numerical count. In establishing rules and regulations, as provided for by such chapter, it has been deemed wise and proper to establish certain regulations at once.

The following regulations have been prepared by the Superintendent of Weights and Measures and the chief or principal weights and measures officials of the cities of the first class, namely:

F. REICHMANN, Superintendent of Weights and Measures of the State of New York.

J. L. WALSH, Commissioner of Weights and Measures of the City of New York.

C. J. QUINN, Sealer of Weights and Measures of the City of Buffalo.

J. H. STEPHENSON, Sealer of Weights and Measures of the City of Rochester.

(4) *Commodities in glass bottles or jars.* Commodities in glass bottles shall show the contents in one of the following ways:

1. The capacity in terms of gallons, quarts, pints, or half pints, or in terms of fluid ounces, may be blown in the side or neck of the bottle. Such letters shall be at least three-eighths of an inch ($\frac{3}{8}$ ") in height for bottles

having a capacity of six ounces or over, and one-fourth of an inch ($\frac{1}{4}$ ") for bottles having a capacity of over two fluid ounces but less than six fluid ounces, and must be exposed, that is, must not be covered by label or other covering.

2. The quantity of the contents of the bottle when filled may be stated in terms of weight or in terms of fluid measure, the weight being indicated in terms of avoirdupois pounds and ounces and the fluid measure being indicated in terms of gallons, quarts, pints, half pints or gills or fluid ounces. The marking to be on a tag attached to the bottle or upon a label. The letters shall be in bold-faced type at least one-ninth of an inch ($\frac{1}{9}$ ") in height for bottles or jars having a capacity of gill, half pint, one pint or multiples of a pint, and letters at least three-sixteenths of an inch ($\frac{3}{16}$ ") in height for bottles of other capacities on a part of the tag or label free from other printing or ornamentation, leaving a clear space around the marking which indicates the contents.

3. If the bottles are capped the marking may be on the cap in terms of the weight of the contents or in terms of the fluid capacity of the contents. The lettering and designation being the same as those indicated in 2 above.

4. If the marking is etched or ground in the surface of the bottle the letters and figures shall be at least one-quarter of an inch ($\frac{1}{4}$ ") in height. The manner of expressing the contents being the same as those indicated in 1 and 2 above.

Variation. The variation in glass bottles shall be in excess of those allowed by agreement between the Glass Bottle Blowers Association of the United States and Canada and manufacturers of glass bottles by the following amounts: those having a capacity of 2 fluid ounces to 6 fluid ounces inclusive, 3%; over 6 fluid ounces to 16 fluid ounces inclusive, 2%; over 16 fluid ounces to 32 fluid ounces inclusive, 1½%; over 32 fluid ounces, 1%.

The variation of the bottles themselves is prescribed by section 12 of the rules and regulations agreed upon and adopted by the above named blowers and manufacturers and is as follows:

"Section 12. Manufacturers shall allow one-quarter ounce each way, from one-half to six ounces in weight, inclusive; above six ounces to twelve ounces, inclusive, one-half ounce each way; above twelve ounces to thirty-two ounces, inclusive, one ounce each way; above thirty-two ounces to forty ounces, inclusive, two ounces each way."

NOTE. Imported bottled goods, which have been bottled and marked in foreign countries and offered for sale in this State, may be labeled and marked in terms of kilograms or grams of weight or liters (or cubic centimeters), other conditions and size of marking same as above.

(5) In connection with the weight, measure or numerical count, a statement such as the "minimum," "not less than," or a statement that the contents are not "over" a certain amount or a statement that the contents are "between" certain limits will not be permissible. The law contemplates that a statement of the weight, measure or numerical count shall be within reasonable limits and such reasonable limits would constitute an average.

(6) *General regulation.* In all the regulations unless otherwise stated, "a variation" shall be interpreted to mean that such variation on commodities shall be as often above as below.

(7) *Commodities which appear as a unit in the state of nature* may be sold either by weight, measure or count. As an illustration: eggs may be sold by the count or by the dozen; comb honey may be sold by the comb; but where the container containing these individual units contains more than six, it must be marked, for instance, egg carriers, if there are over six eggs in the carrier, must be marked with the number of eggs contained therein, in letters at least half as large as the largest printing on the side or top of the packages on which the indication appears, or where no other printing is present, in letters at least one-fourth of an inch in height.

SPRAYING FRUIT TREES WHEN IN BLOOM

This question must be considered from two standpoints: First: What is the effect on the fruit when spraying is made with arsenical poisons?

The New York Agricultural Experiment Station in the season of 1900 made some careful investigations in cooperation with the Cornell Experiment Station. A description of the experiments and their results was given in Bulletin No. 196. The results show that spraying in bloom tends to thin the fruit if the treatment is given soon after the buds open. When trees had a great abundance of blossoms, spraying but once during the blooming season lessened the yield somewhat. By spraying repeatedly during the blooming season, thus hitting the blossoms as they opened from day to day, the blossoms were nearly all destroyed, and as a consequence scarcely any fruit set.

Second: What is the effect on honey bees when they visit trees that have been sprayed with arsenical poisons?

The only recorded experiments on this question show that careful investigation was made by Prof. Webster at the Experiment Station at Wooster, Ohio. These experiments were reported in Ohio Bulletin No. 68. In summing up the matter Prof. Webster says that he can draw no other conclusion from the results of his experiments than that the bees are liable to be poisoned if the bloom of fruit trees is sprayed; the liability increasing in proportion as the weather is favorable for the activity of the bees, and that all bloom must have fallen from the trees before the danger will have ceased.

The best authorities in this state are all agreed that there is little need of spraying when trees are in full bloom, and as long as there seems to be some risk to bees, the law prohibiting such spraying is generally approved.

The following is a copy of the law in the State of New York: Section 1757. Penal Law.

Spraying Fruit Trees with Poison.—Any person who will spray with, or apply in any way poison or any poisonous substance, to fruit trees while the same are in blossom, is guilty of a misdemeanor, punishable by a fine of not less than ten (\$10) dollars or more than fifty (\$50) dollars for each offense;

LITERATURE ON BEES AND THEIR CULTURE

Everyone interested in bees should acquire one or more of the standard text books on the subject, a number of which are here enumerated.

"A B C and X Y Z of Bee Culture," by A. I. and E. R. Root, 712 pages; 1913. This is a valuable work for any beekeeper; it is frequently revised and kept up-to-date.

"Advanced Bee Culture," by W. Z. Hutchinson, 200 pages; 1912.

"Fifty Years Among the Bees," by Dr. C. C. Miller, 352 pages; 1912.

"Langstroth, on the Honey Bee," by C. P. Dadant, 575 pages.

"How to Keep Bees," by Anna Botsford Comstock, 228 pages. A good book for beginners.

Periodicals on Bee Culture

A man cannot know too much about his business; hence it is advisable for the amateur to invest in at least one periodical. The following are published in the United States.

"Gleanings in Bee Culture," published by the A. I. Root Co., Medina, Ohio, semi-monthly, \$1.00 per annum.

"The American Bee Journal," edited by C. P. Dadant and Dr. C. C. Miller, published at Hamilton, Illinois, monthly, \$1.00 per annum.

United States Bulletins

A number of valuable bulletins on various subjects of interest to beekeepers, are published by the United States Department of Agriculture. The following are of especial value, and may be obtained by addressing the Secretary of Agriculture, Washington, D. C.:

Farmers' Bulletin No. 447, "Bees." By E. F. Phillips, Ph.D., 1911, 48 pages, 25 figures. A general account of the management of bees.

Farmers' Bulletin No. 442, "The Treatment of Bee Diseases." By E. F. Phillips, Ph.D., 1911, 22 pages, 7 figures. This publi-

cation gives briefly the symptoms of the various bee diseases with directions for treatment.

Circular No. 94, "The Cause of American Foul Brood." By G. F. White, Ph.D., 1907, 4 pages.

Bulletin No. 55, "The Rearing of Queen Bees." By E. F. Phillips, Ph.D., 1905, 32 pages, 17 figures.

Bulletin No. 75, Part I, "The Production and Care of Extracted Honey." By E. F. Phillips, Ph.D. "Method of Honey Testing for Beekeepers." By S. A. Browne, Ph.D., 1907, 18 pages.

The method of producing extracted honey, with special reference to the care of honey after it is taken from the bees, so that its value may not be decreased by improper handling. The second portion of the publication gives some simple tests of adulteration.

Bulletin No. 75, Part II, "Wax Moths and American Foul Brood." By E. F. Phillips, Ph.D., 1907, pages 19-22, 3 plates.

BEEKEEPERS' ORGANIZATION

All persons thoroughly interested in the pursuit of beekeeping should become members of one or more beekeepers' societies. At the conventions held by these societies, an opportunity is afforded to exchange ideas, to impart and receive information of value, and all should find them both pleasant and profitable. "In union there is strength."

THE NATIONAL BEEKEEPERS ASSOCIATION

Officers

Dr. Burton N. Gates, President, Amherst, Mass.

Dr. H. A. Surface, Vice-President, Harrisburg, Pa.

E. B. Tyrell, Secretary, 214 Hammond building, Detroit, Mich.

C. P. Dadant, Treasurer, Hamilton, Ill.

Directors

E. D. Townsend, Northstar, Mich.

J. M. Buchanan, Franklin, Tenn.

Wesley Foster, Boulder, Colo.

F. B. Cavanaugh, Hebron, Ind.

Prof. Wilmon Newell, College Station, Texas.

"Object"

(From the constitution of the National Beekeepers' Association.)

"The object of this association shall be to aid its members in the business of beekeeping, to help in the sale of their honey and beeswax and to promote the interest of beekeepers in any other direction decided upon the board of directors."

"Official Organ"

"The Beekeepers' Review, a monthly publication shall be published by this association as its official organ."

Membership in the National Association is through its affiliated associations, either state or local, and all members receive the official organ free.

THE NEW YORK STATE ASSOCIATION OF BEEKEEPERS' SOCIETIES

George B. Howe, President, Black River.

Oscar Dines, Vice-President, 105 Seeley avenue, East Onondaga.

Irving Kinyon, Secretary-Treasurer, Camillus.

The membership of this society is composed of delegates from the local affiliated societies and meets annually.

LOCAL ASSOCIATIONS

Adirondack — President, George Cary, Gansevoort; Secretary, H. E. Gray, Fort Edward.

This association is a branch of the National Association. Membership fee \$1.50.

Cayuga — President, N. L. Stevens, Route 18, Moravia; Secretary, J. W. Pierson, Route 33, Union Springs.

Cortland — President, L. F. Horton, McGraw; Secretary, Dana Denison, Truxton.

Eastern, N. Y. — President, W. D. Wright, Altamont; Secretary, S. Davenport, Indian Fields.

Fulton-Montgomery — President, G. W. Haines, Mayfield; Secretary, Charles Stewart, Johnstown.

Jefferson — President, A. A. French, Black River; Secretary, Hudson Shaver, Limerick.

Livingston-Wyoming — President, George W. Collier, Warsaw; Secretary, Charles T. Humphrey, Warsaw.

Monroe — President, Fred Baetzel, 351 Mount Hope avenue, Rochester; Secretary, R. J. Ruliffson, 735 Mount Hope avenue, Rochester.

Onondaga — President, P. G. Clark, Marietta; Secretary, J. H. Cunningham, 303 Syracuse University, Syracuse.

Oswego — President, Mortimer Stevens, Pennellville; Secretary, Charles B. Allen, Central Square.

Ontario — President, W. F. Marks, Route 2, Clifton Springs; Secretary, F. Greiner, Naples.

St. Lawrence — President, F. C. Hutchins, Massena Springs, Secretary, Rasine Thompson, Depuyster.

Seneca — President, C. J. Baldrige, Kendaia; Secretary, C. B. Howard, 59 Lyceum street, Geneva.

Western New York — President, Rev. J. T. Green, Interlaken; Secretary, Earl F. Case, Canandaigua.

The membership fees of these societies range from \$1 to \$1.50 per annum and no beekeeper who purchases bee supplies can afford to remain outside, whether he attends the meetings or not, as all these bodies obtain special discounts on supplies and periodicals. Anyone desiring to join any society is advised to correspond with the respective secretaries for terms, etc.

AGENTS---BEE INSPECTION WORK

Appointed under the provisions of sections 300, 301, 302 and 303 of the Agricultural Law.

First Division

Comprising the counties of Albany, Clinton, Columbia, Dutchess, Essex, Greene, New York, Putnam, Rensselaer, Saratoga, Schenectady, Warren, Washington, Westchester. Wheeler D. Wright, Agent, Altamont, N. Y.

Second Division

Broome, Chemung, Chenango, Delaware, Kings, Nassau, Orange, Otsego, Queens, Richmond, Rockland, Schoharie, Suffolk, Sullivan, Tioga, Tompkins, Ulster. N. D. West, Agent, Middleburg, N. Y.

Third Division

Allegany, Cattaraugus, Chautauqua, Cortland, Fulton, Hamilton, Herkimer, Livingston, Madison, Montgomery, Oneida, Schuyler, Steuben, Wyoming, Yates. Charles Stewart, Agent, Sammons ville, N. Y.

Fourth Division

Cayuga, Erie, Franklin, Genesee, Jefferson, Lewis, Monroe, Niagara, Onondaga, Ontario, Orleans, Oswego, Seneca, St. Lawrence, Wayne. Mortimer Stevens, Pennellville, N. Y.

STATUS OF BEEKEEPING IN THE STATE OF NEW YORK ACCORDING
TO THE CENSUS OF 1910*

Counties	No. colonies of bees	Value in dollars	Counties	No. colonies of bees	Value in dollars
Albany	3,035	\$12,206	Onondaga	3,979	17,591
Allegany	5,620	21,606	Ontario	4,091	16,392
Broome	3,312	12,985	Orange	1,906	9,534
Cattaraugus	4,927	19,029	Orleans	1,703	6,713
Cayuga	4,789	20,477	Oswego	2,602	9,572
Chautauqua	3,680	14,745	Otsego	2,071	9,568
Chemung	2,240	7,087	Putnam	366	1,671
Chenango	2,598	11,540	Queens	14	130
Clinton	1,829	6,546	Rensselaer	2,220	9,496
Columbia	2,055	9,067	Richmond	295	2,066
Cortland	2,524	9,830	Rockland	443	2,252
Delaware	4,546	20,481	St. Lawrence ...	5,369	23,474
Dutchess	2,070	9,811	Saratoga	1,835	8,208
Erie	5,195	20,861	Schenectady	1,431	5,939
Essex	1,035	4,753	Schoharie	6,133	23,318
Franklin	1,087	4,937	Schoyler	1,929	5,542
Fulton	1,265	5,372	Seneca	3,084	15,189
Genesee	2,339	9,717	Steuben	7,576	23,074
Greene	2,244	9,574	Suffolk	111	654
Hamilton	248	1,491	Sullivan	2,570	12,865
Herkimer	2,179	10,758	Tioga	2,820	9,828
Jefferson	4,574	22,088	Tompkins	4,536	14,681
Kings	12	70	Ulster	2,735	14,278
Lewis	1,026	3,709	Warren	816	4,912
Livingston	3,700	14,141	Washington	2,890	11,898
Madison	2,753	10,201	Wayne	2,433	9,946
Monroe	2,724	12,797	Westchester	1,090	6,723
Montgomery	3,615	15,234	Wyoming	3,579	15,223
Nassau	207	1,377	Yates	2,142	7,439
New York	2	5			
Niagara	2,837	13,211	Total	156,360	\$646,848
Oneida	3,324	12,966			

Honey and Wax, 1909. Although as noted elsewhere, 15,259 farms reported 156,360 colonies of bees on hand April 15, 1910, 4,863 of these farms, with 16,829 colonies on hand April 15, 1910 made no report of honey or wax produced in 1909. The actual returns show the production of 3,191,733 pounds of honey, valued at \$376,608 and 43,198 pounds of wax, valued at \$13,034; the true totals are doubtless somewhat above these figures.

* Taken from Report of the Thirteenth Census of the United States, 1910.

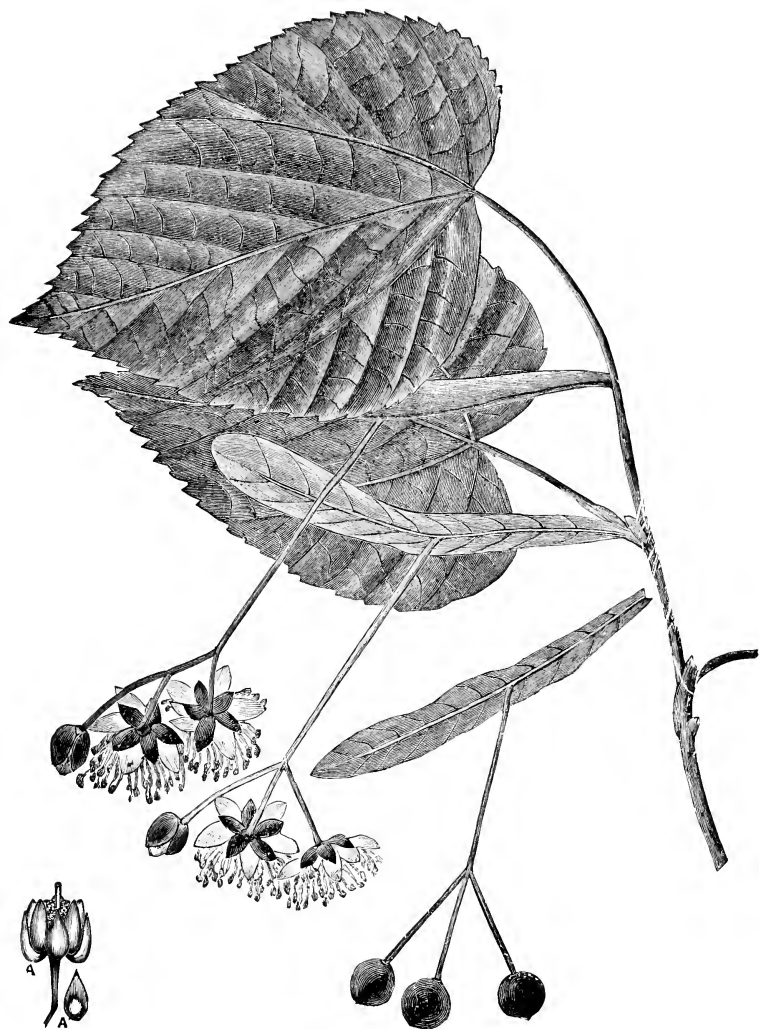


FIG. 74. Basswood in bloom.

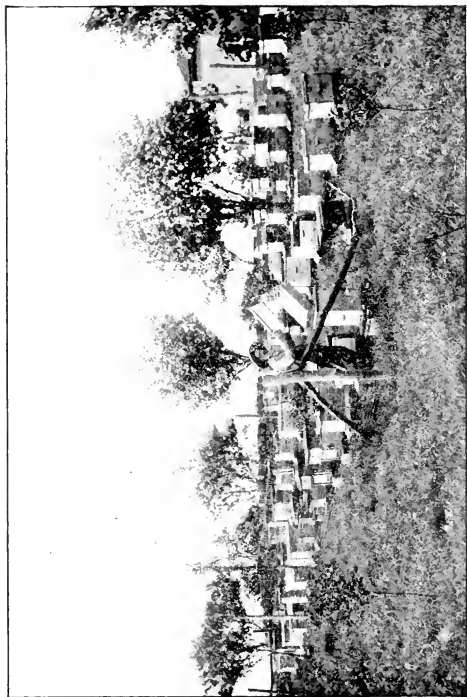


FIG. 75. Apiary of D. W. Trescott, Conesus, N. Y.

(Original)

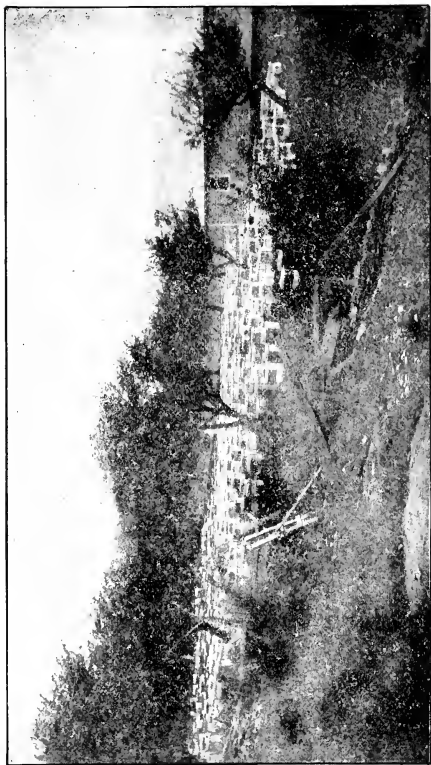


FIG. 76. Apiary of F. W. Alexander, Delanson, N. Y., containing upward of 700 colonies at the time this photo was taken.

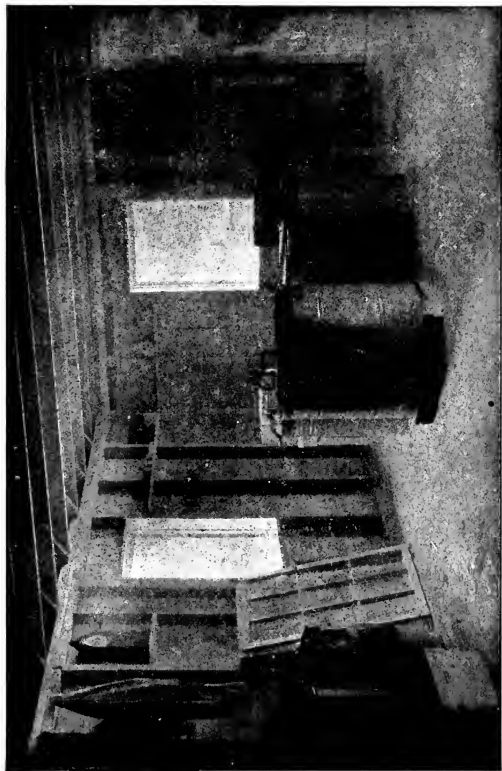


FIG. 77. Interior of F. W. Alexander's honey extracting room.



FIG. 78. Home apiary of George B. Howe, Black River, N. Y.

(Original)

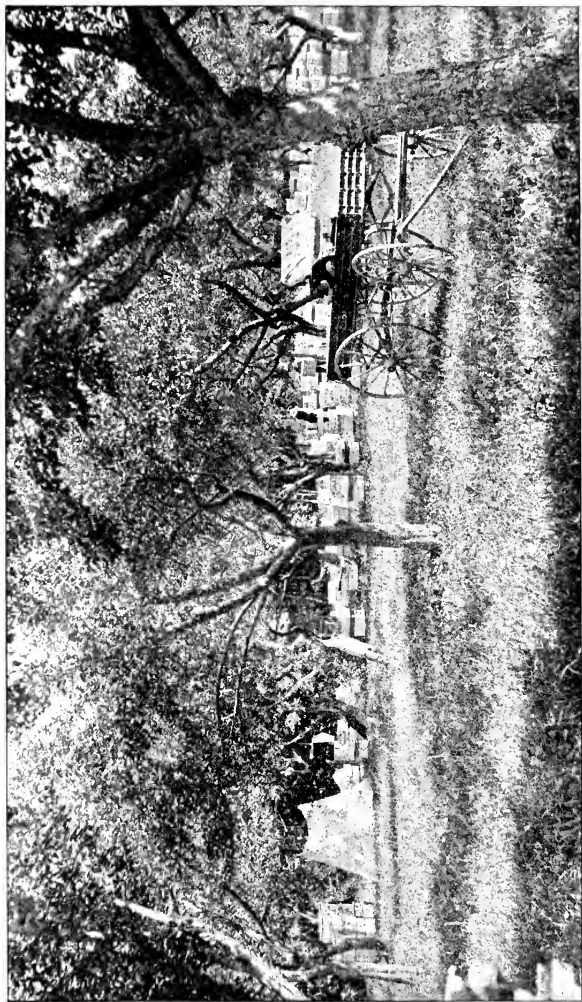


FIG. 79. An out-apiary of W. D. Wright run for comb honey.

(Original)

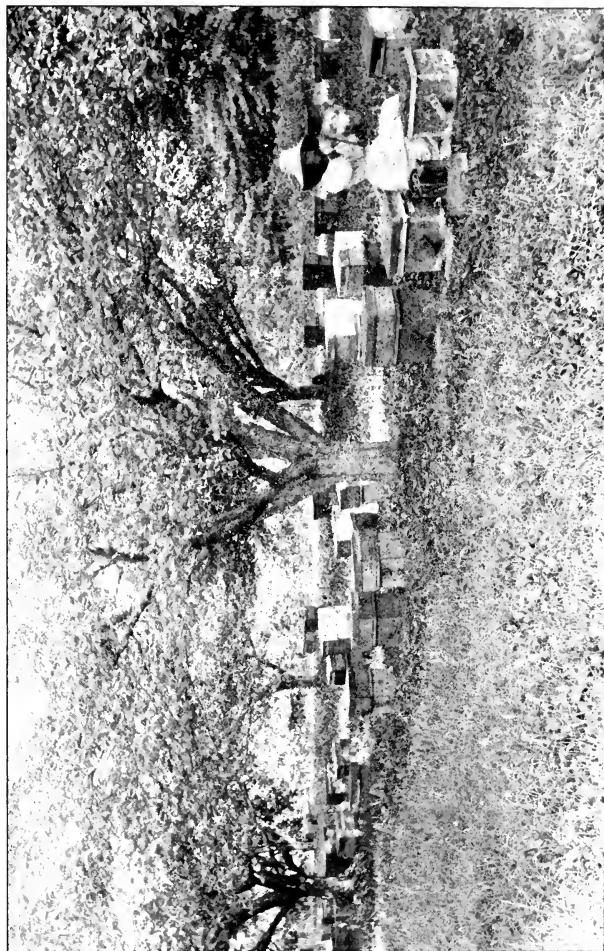


FIG. 80. Apiary of Miss Hettie E. Hoffman, Canajoharie, N. Y.

(original)

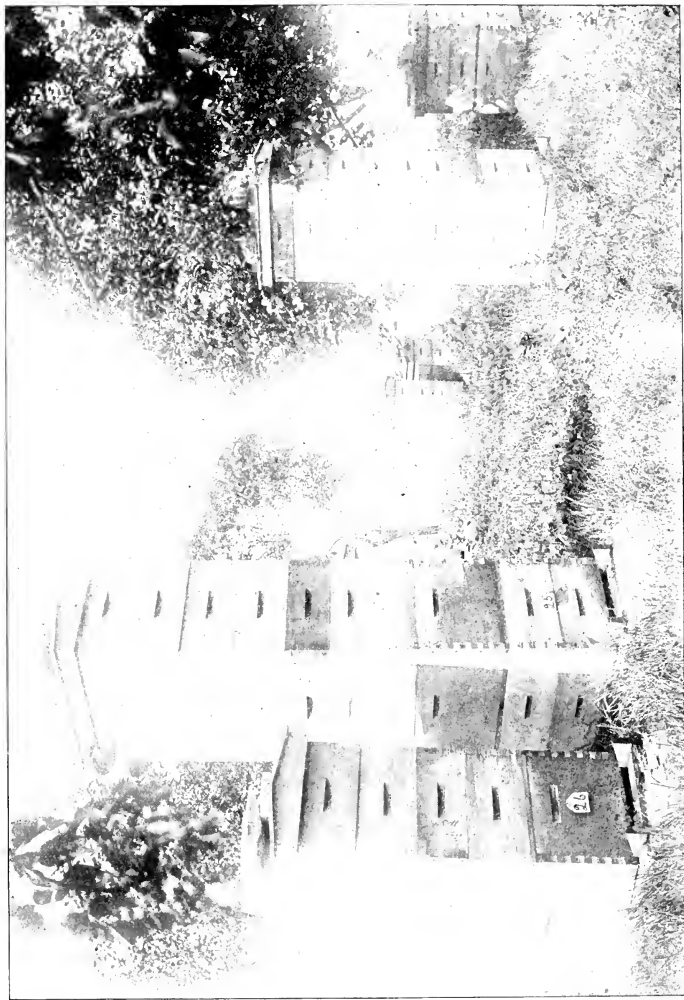


FIG. 81. An example of tiering up, in the apiary of George B. Howe, Black River, N. Y., illustrating the value of an improved strain of bees. (original)

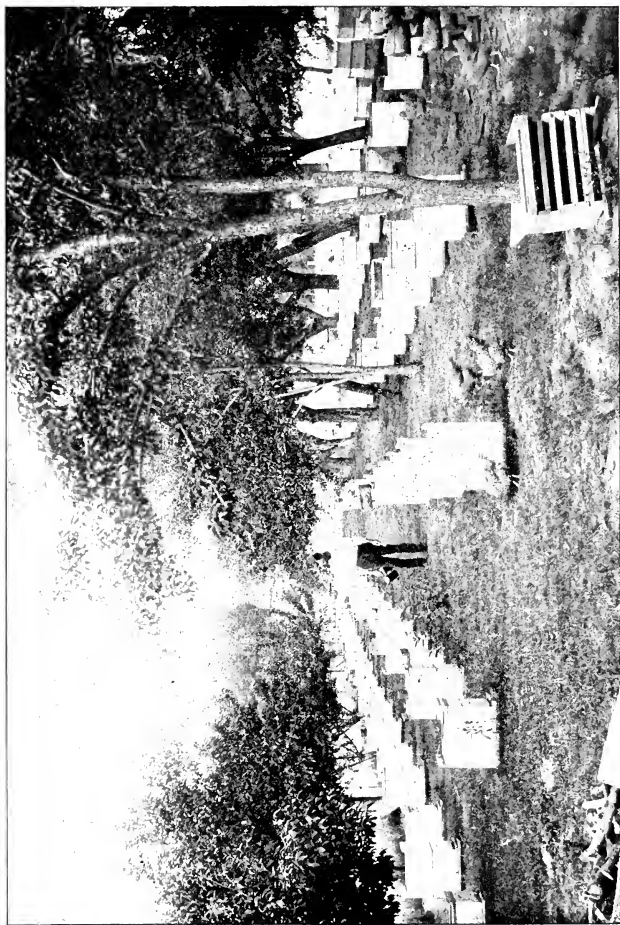


FIG. 82. Apiary of Mr. Frank Hinman, Gallupville, N. Y., run for the production of extracted honey.
(Original)

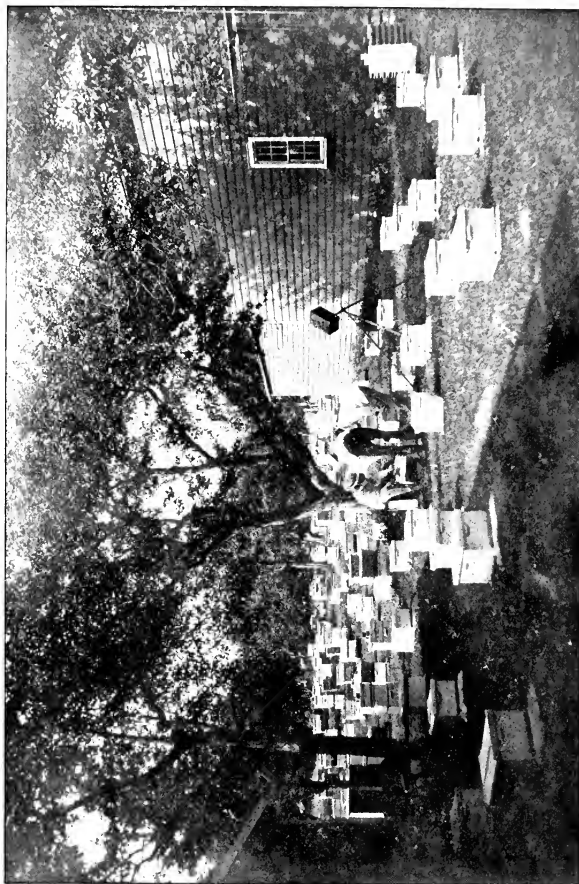


FIG. 83. Home apiary of D. L. Woodward, Clarksville, N. Y.

(Original)

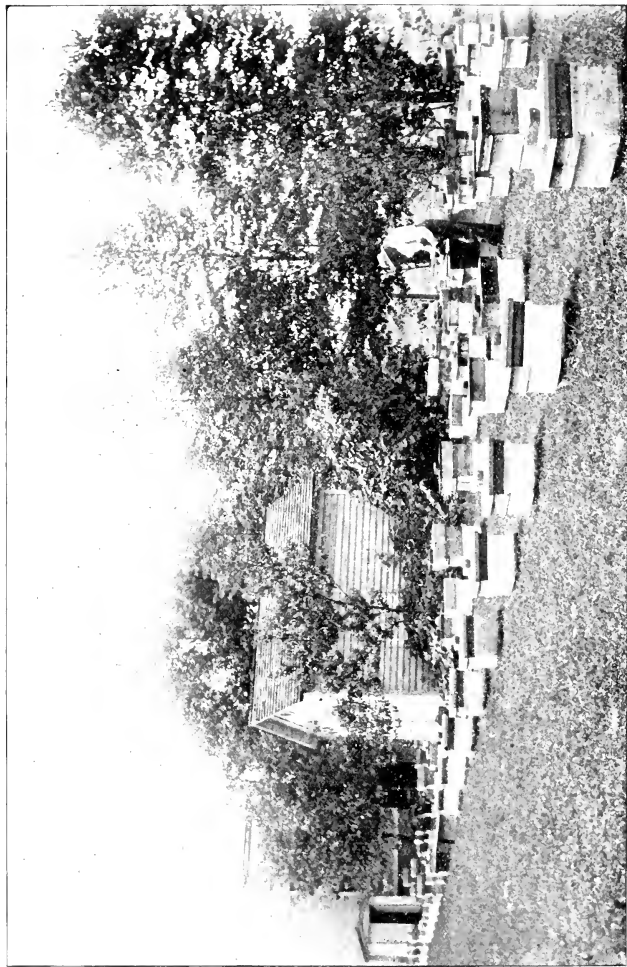


FIG. 84. Home apiary of W. D. Wright, Altamont, N. Y. Comb and extracted honey produced.
(Original)

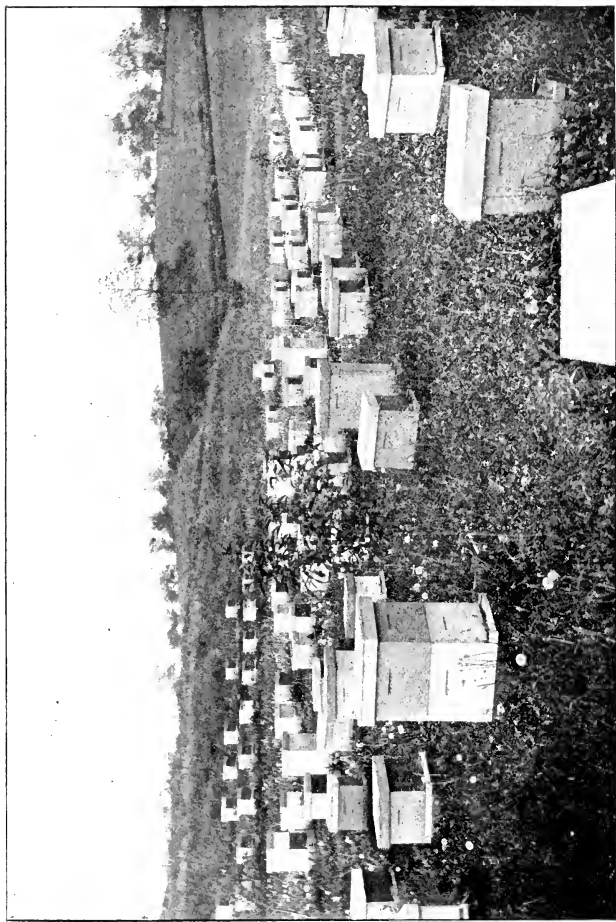


FIG. 85. Apiary of P. W. Stahlman, West Berne, N. Y., run for the production of extracted honey.
(Original.)

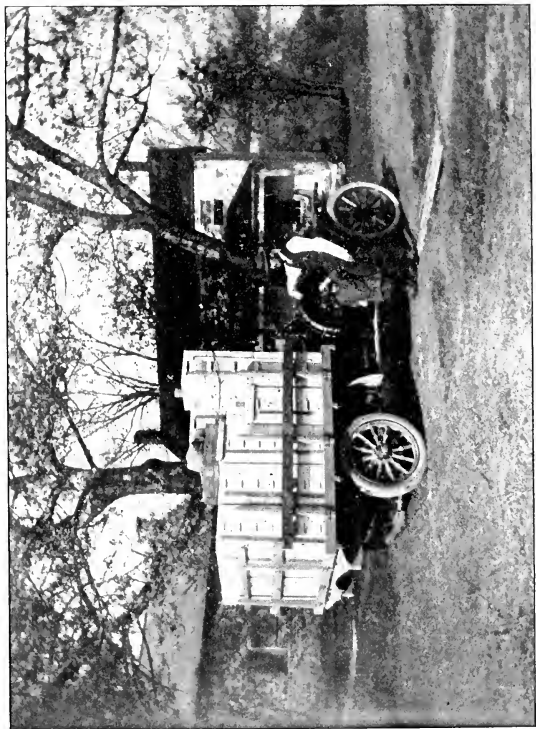


FIG. 86. Fiat, forty horsepower auto truck adapted to the business of honey production, marketing, etc., owned by D. L. Woodward, Clarksville, N. Y.
(original)

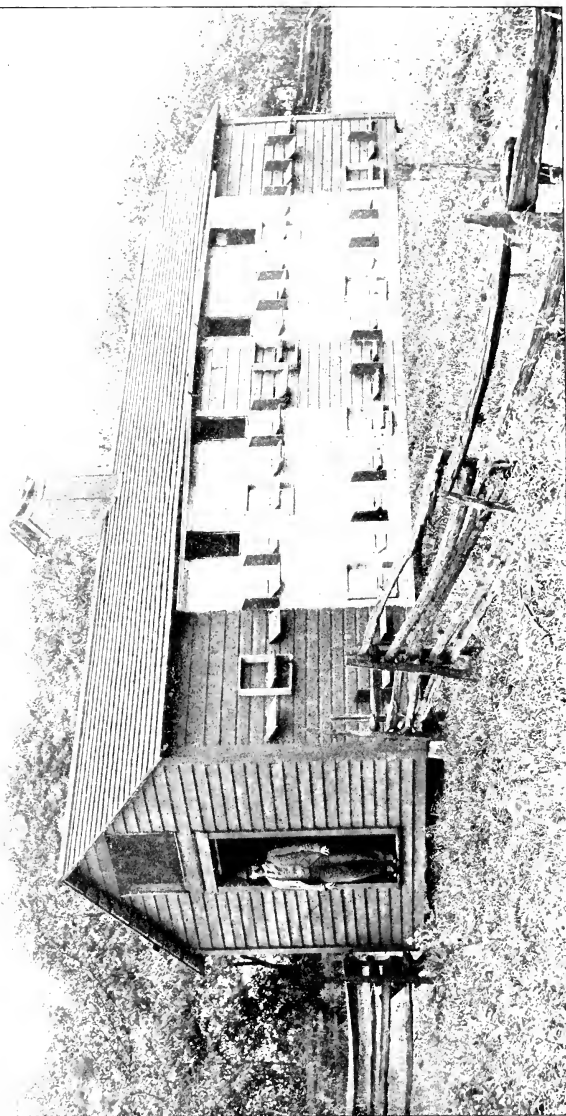


FIG. 87. House apiary of F. H. Loucks, Lowville, N. Y. (Wilcox yard).

(Original)

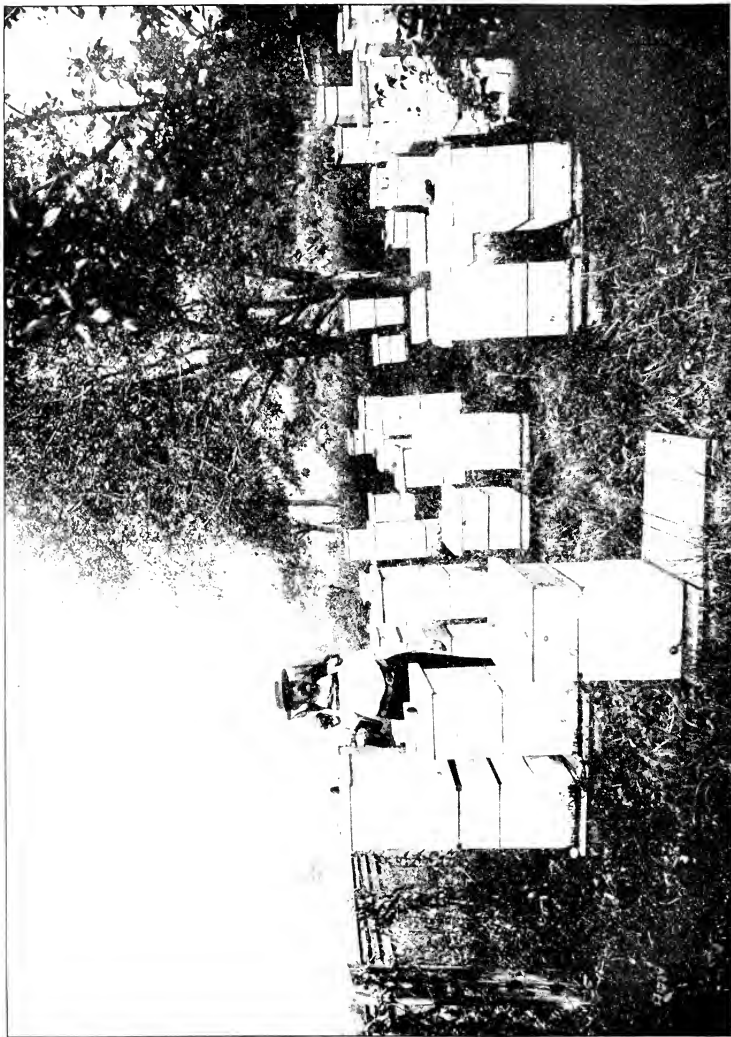


FIG. 88. Apiary of H. E. Gray, Fort Edward, N. Y.

(Original)

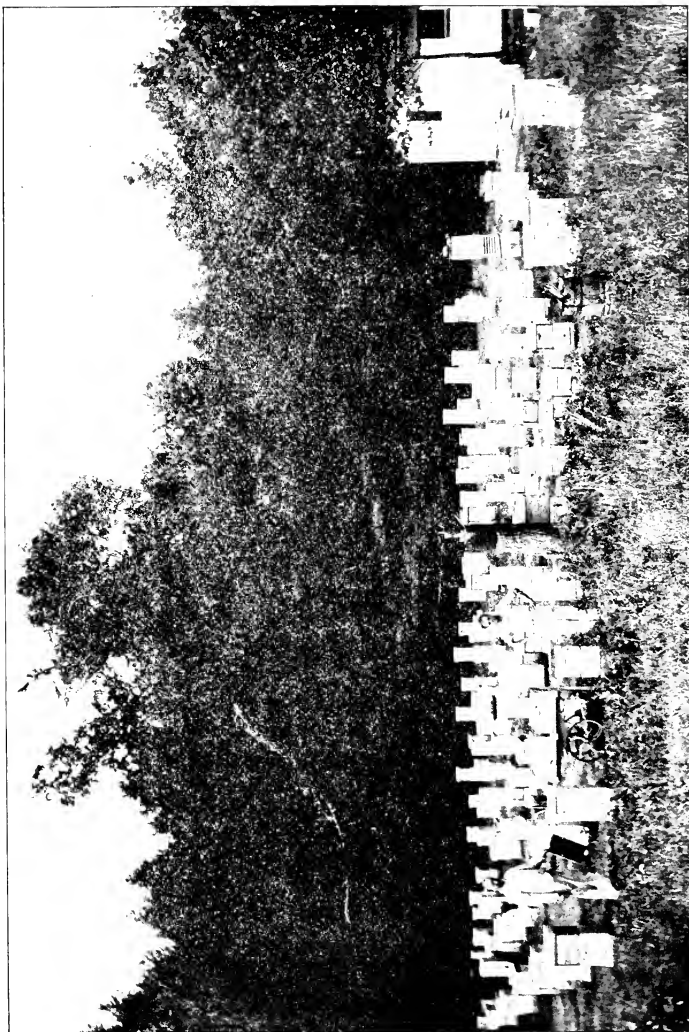


FIG. 89. Apiary of D. C. Stahlman, Knox, N. Y., run solely for extracted honey. Truck for hauling honey in foreground; extracting house in the distance. (Original)



FIG. 90. Apiary of George Cary, Gansevoort, N. Y., run for comb honey production. (Original)

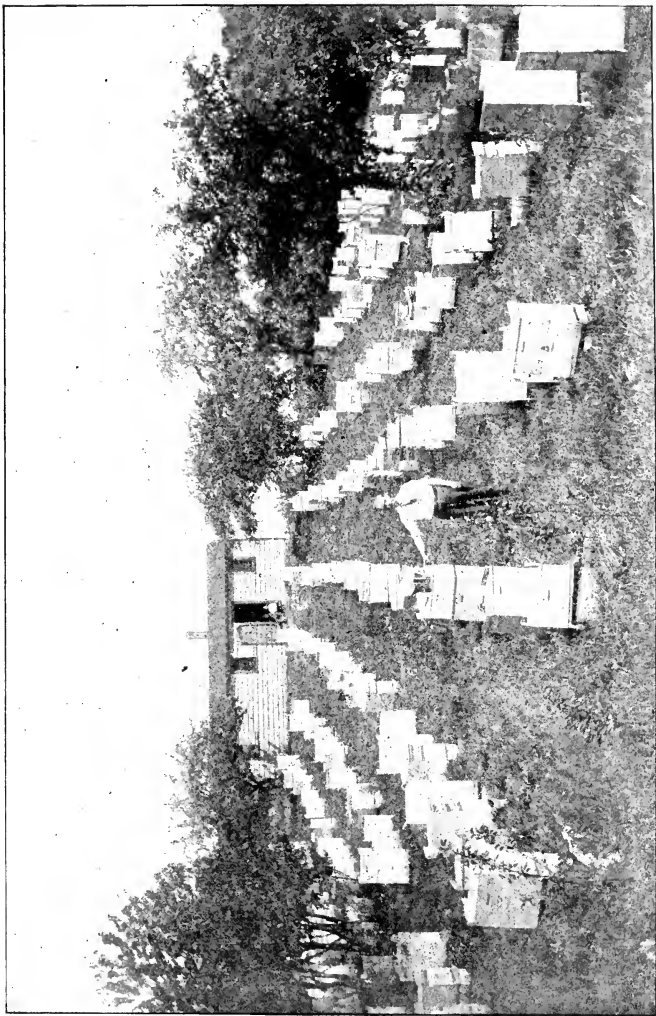


FIG. 91. Out-apiary of W. D. Wright, Altamont, N. Y.

(Original)

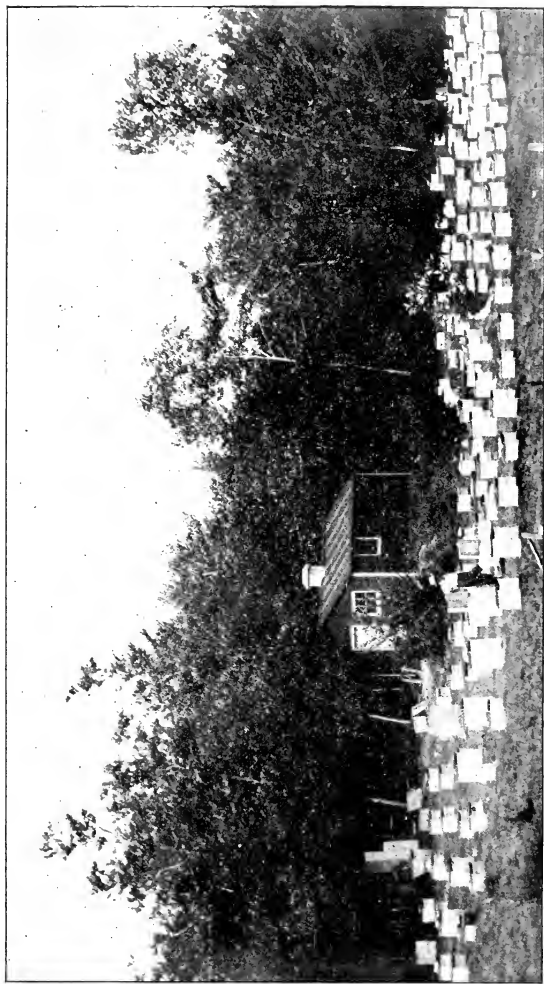


FIG. 92. Apiary of I. Van Auken, Altamont, N. Y., where both comb and extracted honey are produced.
(Original)

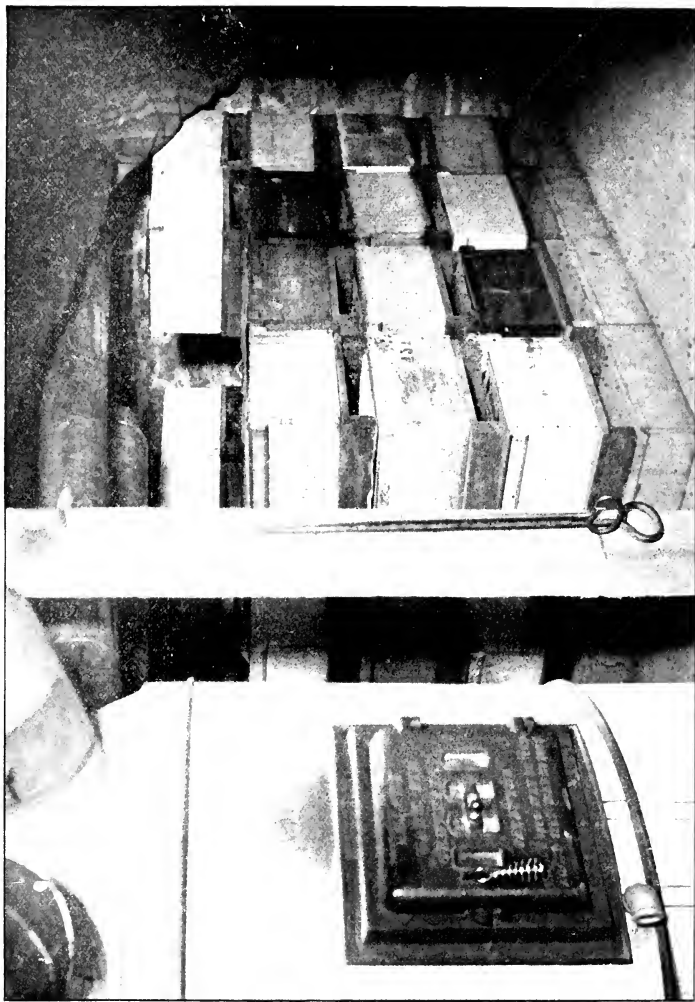


FIG. 93. Wintering bees in cellar containing furnace. The hives nearest furnace were but three feet distant. The temperature of this cellar ran as high as 60° and bees wintered well. (original)

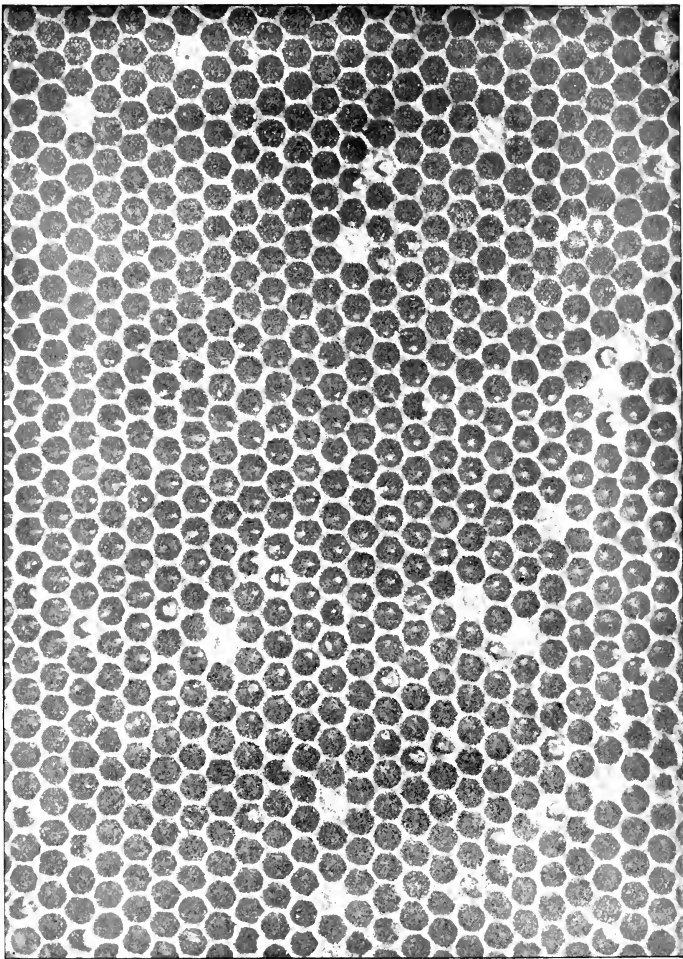
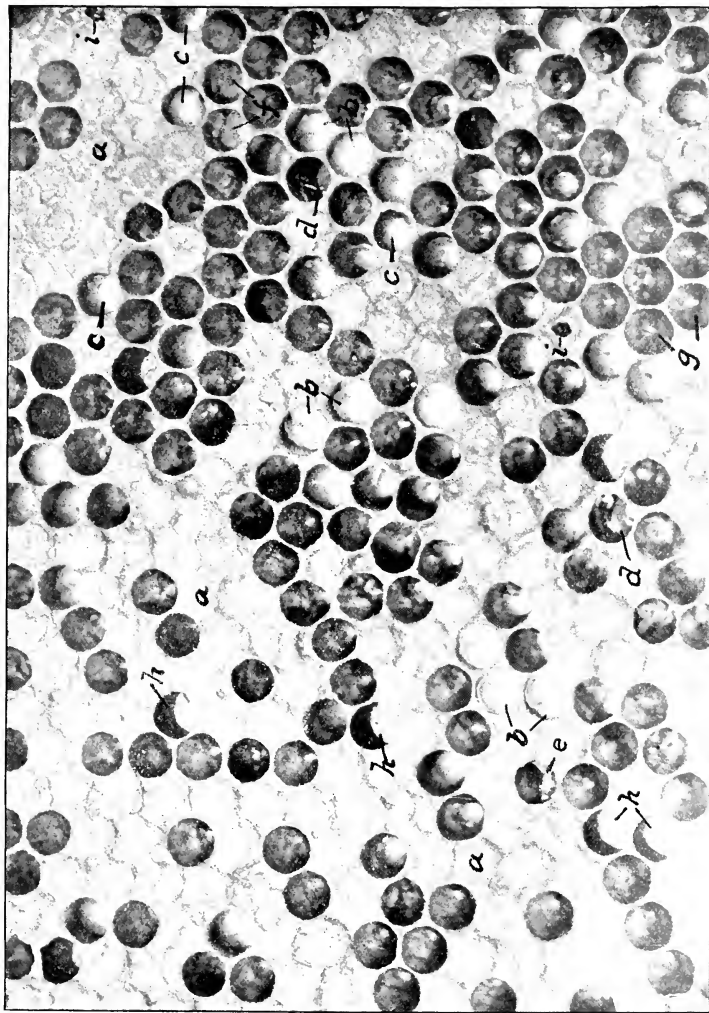
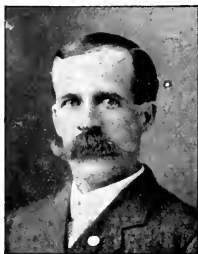


FIG. 94. Pickled Brood. Note the pointed larvae in many of the cells, which is a characteristic of this disease. (Original)



- a. Healthy capped brood.
- b. Healthy larva.
- c. Larva soon after death, white but distorted.
- d. Dead larva, of semi-fluid consistency, brown in color, occasionally slightlyropy.
- e. Dried dead larva, dark brown color.
- f. Dried scales from dead larva, light yellow color.
- g. Eggs recently laid by queen.
- h. Cells of pollen.
- i. Disiccated capped cells, cap-pings perforated.

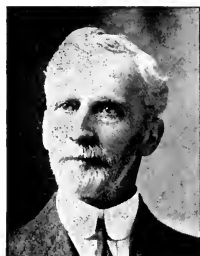
FIG. 95. European Foul Brood (from worker brood, much enlarged). In the sample from which this photo was taken, the disease was not far advanced. (Original)



F. B. Loucks



Rev. Isaac V. Lobbell



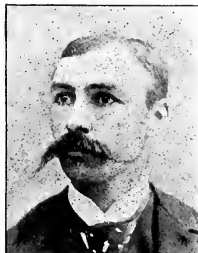
W. D. Wright



H. L. Case



N. D. West
(Original)



Charles Stewart

THE ITALIAN BEE AS A FACTOR IN THE EXTERMINATION OF EUROPEAN FOUL BROOD*

W. D. WRIGHT, ALTAMONT, N. Y.

For ten years past, I have strenuously advocated the Italianization of all black or hybrid bees, located in or near any locality where European foul brood was epidemic. This has been attended with more or less success, depending upon the action of the parties directly interested. Some beekeepers were incredulous of the claims made by me, and seemed to regard them as extravagant, or thought that the purchasing of Italian queens was an unnecessary expense, or perchance, that I was interested in the sale of queens, etc., thus accounting for my insistence on this point believing there must be some profit accruing to me through the transaction. On the other hand, many practical apiarists have gladly heeded my advice, and, acting promptly, have averted disaster. A certain York State beekeeper, who a few years since, when I talked with him of this matter, ridiculed the idea of combating foul brood by the agency of Italian bees, now loses no opportunity of landing them to the sky for this purpose, in fact, so enthusiastic has he become in this respect, that he pales my own efforts; thus, many are being converted on this point, after giving it a trial.

Many ask, "Why are the Italians more nearly exempt, than the other races?" I wish I knew, but, not knowing, I am unable to give the desired information, therefore shall leave that point for some expert investigator to determine. For our purpose, it is sufficient to know the facts as stated.

We shall consider the importance, efficiency and economy in keeping only the Italian race, when combating this disease.

IMPORTANCE

When we consider that there is no other race or variety of bees that is so nearly exempt or immune to the ravages of this disease,

* Delivered at the New England, United States and Canada Bee Inspectors' Convention at Amherst, Mass., February 7, 1912.

as the pure Italian; and that large or small apiaries of this race often pass through an epidemic of European foul brood of several years' duration almost unscathed, and furnish their owners a good profit at the same time: While contrariwise, all black and hybrid bees in the vicinity suffer heavy losses, and frequently total annihilation, we begin to realize somewhat, the important position held by these bees. There are numerous remedies and treatments recommended for the relief and cure of this malady, but where is there one that will compare with Italianization as a preventive measure before the colony has been exposed, or after treatment, to prevent reinfection?

I consider this item, Italianization, of more importance than any other one and perhaps, than *all* others combined, in the fight against this arch enemy of beekeepers.

In view of the foregoing facts, it is a pity we have not legislation making Italianization of all bees, where necessary for protection, compulsory. However, I presume such a law would be considered unconstitutional.

EFFICIENCY

We have an abundance of proof from many beekeepers, of the efficiency of this practice. They know by experience how easy it is to control and keep this disease in check, which is certainly reassuring to one who has had the destruction of his apiary and business staring him in the face. After such experience, most beekeepers feel somewhat independent, and greatly relieved of the anxiety which they formerly experienced.

In recommending the Italians, I always try to make myself understood on this point, namely; I do not claim that they are absolutely exempt from the disease, but only in the main, as a race.

Beekeepers who have their apiaries thoroughly Italianized in advance of the epidemic can scarcely realize what they have escaped by thus taking time by the forelock.

I shall repeat a statement which I have made before, that if I desired to locate an apiary in a certain locality, the presence of European foul brood there would not deter me from doing so. Given the right kind of bees and a good season, I should willingly take my chances of success.

ECONOMY

The greatest economy is derived from Italianizing in advance of the advent of the disease, then nearly everything is saved, as there is no purchasing of comb foundation, hives, frames, etc., for treatment, only the purchase price of the Italian queens, and labor of introducing, which can hardly be counted on this score, as they are worth more than their cost outside of their agency in warding off disease.

I have met beekeepers, in my inspection work, who have taken hold bravely and thoroughly treated by shaking their apiaries of black and hybrid bees, but thought to economize by omitting the introduction of the Italians, which I urged upon them as being very essential. The result was that the following spring, one-half of the treated colonies were reinfected, requiring the purchase of an additional amount of comb foundation, frames, etc. Nor is this all; a considerable amount of the surplus honey crop is sacrificed whenever a colony is shaken during a honey flow — thus, besides the extra expense incurred by treatment each season, there is an actual loss of labor and income. Where but few colonies are kept, this matter is not very important, but when the principal income is from the apiary, the difference becomes rather serious.

Of course, I do not recommend the purchase of Italian queens in large numbers if the beekeeper is so situated and experienced that he can rear them cheaper and of as good quality himself. However, this is not often the case, and some of the most extensive apiarists purchase them by the hundred from professional breeders. The price for good stock is now so low that it is far from prohibitive.

It has been reported that Italianizing has not been found to be as effectual in handling American foul brood. I have had no experience along that line, and regret that I have nothing more effectual than shaking to offer in the treatment of this disease.

SWARMING AND ITS CONTROL*

R. F. HOLTERMANN, BRANTFORD, ONT., CANADA.

In the days of long ago, yes even in more recent times and it may safely be said of many at the present time, the bees choose their own time for swarming and many a beekeeper can safely lay the shipwreck of his hopes, as a beekeeper, to his inability to control the swarming impulse in his bees and departure of his season's profits from a colony with the departure of the first swarm in the absence of its owner.

There are those who have a fair knowledge of beekeeping, they in fact know enough of beekeeping to make a moderate success of the business could they only control the swarming impulse, but as their main business does not allow them to watch for swarms during the hours that they may issue, they run the serious risk of losing them.

Again, what apiarist who has engaged in beekeeping according to old and well-known methods, when with an apiary of say one hundred colonies he has been kept busy a large portion of the swarming hours in providing for issuing swarms, or even followed them to difficult heights and places and then has managed them on the nonswarming plan, has gone back to the first system? I venture to say, speaking from personal experience, none.

In studying the control of swarming it is of necessity desirable to know the cause. The beekeeper who seeks to find the cause in any one specific thing is, in my estimation, on the wrong track. Some varieties of bees swarm more readily than others. In one hive a colony may swarm, when a larger entrance to the hive and facilities for ventilation might have prevented swarming. In another there is abundant facilities for ventilation but the hive has become crowded and the bees require room.

In still another case the queen is failing, the bees start supersede cells and when the young queen hatches the hive throws a swarm, when otherwise the impulse would not have developed.

It is now quite a number of years since I made the public

* Given at the Convention of the New York State Association of Beekeepers Societies at Syracuse, N. Y., January, 1912.

statement — a statement which has been indorsed by well-known beekeepers — that the first step toward swarming is to start drone brood. It takes longer for them to become potent for fertilization and therefore it is necessary in reproduction that the drone brood should precede the virgin queen cells. Next comes queen cell cups, then eight days before the first young queen emerges from the cells, under normal conditions, the first swarm issues.

Some years have passed since I wrote the above and I would now ask to insert another link in the chain, one preceding the drone brood, and that is, first a prosperous colony and a rapid increase in young bees and brood.

The swarming impulse may, through environments, be broken at any of the above stages except when queen cells have actually been begun. What is meant is that drone brood may mature and the hive contain drones yet the cell cups never be built. The cell cups may be built but no egg ever be deposited in them owing to conditions which may set in unfavorable to swarming, but changed conditions in the hive will rarely check the swarming impulse if queen cells have been started, although a cessation of nectar in blossoms may.

In saying this, I do not wish it to be understood that giving room to the bees in time does not have the effect of preventing the swarming impulse from developing, but that after the swarming impulse has developed, the mere adding of supers is not likely to break up that impulse.

The things which my observation leads me to believe checks the swarming impulse is first of all an abundant brood chamber. A twelve-frame Langstroth brood chamber is not too large for a queen of no better laying strain than is procurable on every hand.

Moses Quinby of your own state built better than many have given him credit for, when he planned the large brood chamber he did, and in the present step with beekeepers, generally from an eight-frame Langstroth hive to a ten, they are only paving the way to additional outlay when they find the twelve-frame hive as much better than the ten, as they are finding the ten-frame hive better than the eight.

Next, the entrance to the hive: Who among those who have traveled through the country have not seen a hive of bees with an entrance four to six inches wide or even less and the front of

the hive partially covered with bees. Such an entrance to a hive is a mistake and a loss to the beekeeper. The entrance to my hives are the full width of the inside measure of the hive, seventeen inches, and during the time of gathering surplus honey one and one-eighth inches deep.

Then as to supers: In the production of extracted honey, the bees should be given plenty of surplus room to store and ripen their honey. I have had five full depth extracting supers on a hive and practically all the room occupied with honey at the close of the flow and no swarming impulse. Who could obtain these results in a five-week clover flow from the combined surplus crop of a parent colony and a swarm?

Shade during the heat of the day is an important factor in the prevention of swarming. A row of colonies on the west side of a fence in the direct rays of the south and west sun is more liable to swarm than if the same row stood under the shelter of an apple tree with only the morning and evening sun upon the hives.

Again, a colony will often swarm, and if the queen is clipped, owing to the absence of a queen among them, the bees undertake to return to the old stand, and sometimes scatter along a row of hives and enter them. I believe these bees tend to set up the swarming impulse wherever the conditions for such are at all favorable.

Some varieties of bees are much less inclined to swarm than others. It is only a master beekeeper and a specialist who should undertake to run varieties of bees strongly inclined to swarming.

Lastly, the season: We know there are seasons during which bees are much more inclined to swarm than others. In tropical countries bees do not swarm during heavy flows but when the conditions for nectar gathering are only moderate, swarming sets in.

My observation leads me to believe that the same, to some extent at least, is true in our own land and that steady heavy flows tend to diminish swarming; erratic and changeable flows tend to increase swarming.

A large and contented colony is the foundation to successful honey production, since "In union there is strength." To keep strong colonies from the swarming impulse rather than to break it up after they have it, is the key to success.

INTRODUCING QUEENS WITH THE "WEST" CAGE *

NOAH D. WEST, MIDDLEBURG, N. Y.

Close the large end of the cage with a piece of common stick candy one and one-half inches long, and attach the cage to one side of a comb within the hive, by means of its spur. The candy stopper may be varied in length according to the length of time you wish the queen to remain caged, and may be kept from falling down in the cage by placing a nail between the coils of the cage at the lower end of the candy. One and one-half inches is the right length in most cases. The bees require about 48 hours to eat out such a piece; and at the end of this time the bees are acquainted with the queen, and are generally ready to welcome her when she leaves the cage. Virgin queens, however, are more difficult to introduce than laying ones; therefore the colonies to which they are to be introduced should be in proper condition to receive virgin queens.

First, get sticks of hard candy — that is, small enough to slip easily into the large end of the spiral cage. Cut the sticks of candy in pieces for cage-stoppers. Cut some pieces one inch long and some one and one-half inches long. I prefer candy not too highly colored. Next, have a good laying queen in the spiral cage. Then remove the tin cover and slip one of the pieces of candy into the large end of the cage, $1\frac{1}{2}$ inches down in the cage; then the top end of the candy just comes even with the top of the cage. Be sure to place a nail or a toothpick through the spiral cage just below the candy, so that, when the bees eat away the candy through the coils of the cage, and the candy becomes small in diameter, it will not fall down on the queen.

This being done, go to a hive that has a condemned queen. Open the hive and kill the queen. Before closing the hive introduce the new queen by hanging the spiral cage by its spur on the side of a comb in some place where it will be out of the way. Be careful not to press combs of honey against the cage hard enough to daub the queen with honey. The cage may be laid on top of the broodframes under a quilt, or on the hive bottom if desired.

I introduce nearly all of my queens in this way with one operation. This saves me a good deal of time and I lose but few

* Delivered at the Adirondack Beekeepers Convention at Glens Falls, N. Y.

queens. The fact is, when I see a poor queen I kill her at once, if it is in the season when I have surplus queens on hand. Then I introduce a young laying queen before closing the hive. I then mark the hive so that I know what has been done, and give it no more attention until some days later, when I am again working in said out-apiary.

I want to say a little more about the hard-candy stopper. It is very much more convenient to use than the soft candy usually made with sugar and honey. It is cleaner to handle. By the use of hard candy the apiarist can learn to gauge the time he desires his queens to be liberated.

The apiarist will soon learn how much hard candy to use and how to use it.

The hardness of the candy and the strength of the colony have something to do with the length of time required to liberate the queen, by using a piece of candy $1\frac{1}{2}$ inches long. If you set the nail through the cage for the candy to rest on, so that only $\frac{3}{4}$ -inch of the candy is covered with the cage, and $\frac{3}{4}$ -inch of the candy protrudes above the cage, then the bees will eat the same size of candy stopper away very much sooner than they would if the candy stopper were crowded down into the cage the whole length of the candy.

Queens can just as well be introduced some days after the removal of the old queen, the same as with some other cages that require soft candy; but remember to use just as much hard candy as you need to confine the queen the desired length of time.

Many will think that the bees will not eat the hard candy away and liberate the queen; but they will do it with the spiral cage.

The candy becomes softer after being covered with bees, and they eat it away faster than you would think. They eat it from all sides through the cage until the candy is so small that the bees go into the cage with the queen before she walks out. The bees never kill the queen in the cage.

In due time the queen walks out of the cage quietly. She is now safely introduced.

It is better not to open the hive for the next few days after the introduction of a new queen.

Many queens are killed by opening the hive too soon after they have been safely introduced, before they begin laying freely.

WHICH IS THE MOST PROFITABLE, THE PRODUCTION OF COMB OR EXTRACTED HONEY?*

GEORGE B. HOWE, BLACK RIVER, N. Y.

At first thought most beekeepers would say this would hardly be a fair question. I shall do my best to explain why I changed from comb to extracted honey after producing comb honey by the ton for years, and having such men as Mr. F. H. Loucks compliment me as one of the best comb-honey producers of the state. Mr. Loucks said at one of our conventions that he could not understand why, at that time, I should make a change, when others were taking up comb-honey production and most of the bee journals and even the Department of Agriculture at Washington were urging beekeepers to produce comb honey, as there surely would be a shortage.

Let us take up this matter thoroughly. Taking the price of comb and extracted honey for the past few years, I find that the prices of extracted honey have kept abreast with those of comb honey as they have advanced, and in some sections are in the lead of comb honey prices.

A prominent beekeeper told me several years ago that I was making a mistake, that I should produce extracted honey; so I decided to experiment. I took the colonies that were not strong enough to produce comb honey and to my surprise they made more pounds of this kind than the stronger did of comb honey. I had been told this before, but I figured that if such weak colonies did so well what would the stronger colonies do. Consequently I set aside a yard and ran it for extracted honey exclusively. This proved what my friend had told me—I was losing money producing comb honey.

Lest you get the wrong impression let me explain why I obtained these results. Our honey flow is from clover and bass wood; there was no dark honey to speak of. Most years bass wood fails to yield us any honey, and this being the case we have a short flow, which leaves even the expert with too many unfu-

* Given at the New York State Beekeepers' Association Meeting at Syracuse, January, 1912.

ished sections on his hands. If there is a long honey flow that can be depended on, it would pay some beekeepers better to produce comb honey. There is always a ready market, or has been for the past few years, for good comb honey.

We will take the price paid for fancy and No. 1 comb honey in 1912 which was fourteen cents a pound delivered in New York City. You must figure your time setting up your sections and putting in your foundation comb; also the cost of your section boxes and foundation, shipping cases and carriers, with freight. You will do well if this does not cost you above four cents a pound. That will leave you ten cents a pound for your comb honey.

Good extracted honey can be bought at eight cents a pound wholesale and eleven cents retail. Some, I will admit, receive more than this and so did others with their comb honey. Even so, I can produce from one-half to double the amount of extracted honey that I can comb. Since the pure food law went into effect, I sell ten pounds of extracted honey to one of comb — that is to my home trade. And since I sell from two to five tons a year you can see why I made the change.

Also, we can care for more bees and keep our honey if properly ripened on the hives and properly put up, as long as we want to, but with comb honey, you must get it on the market in time and in first class shape to get the best prices.

We should supply our home market first; many beekeepers are losing money every year by not doing so. Do not be afraid to ask any of your neighbors if they want some fine honey. After that they will ask you and even come after it. It is a pity that so many people go without honey because the beekeepers do not advertise their product as do other producers of food products. The farmers are my best customers. They buy in large quantities and pay cash.

Let us be as neat and clean as possible, asking anyone in to see us extract the honey. Let them sample it, and the old hoax of manufactured honey will soon die out in your locality.

THE PRODUCTION OF EXTRACTED HONEY*

R. H. HOLTERMANN, BRANTFORD, ONTARIO, CANADA.

In the successful management of bees we may well draw a circle and begin at the desired point and by the time we reach the completion of the story we shall reach the point at which we began. For the successful production of either extracted or comb honey, the proper wintering of the bees is an important factor.

For many years I made a practice of wintering bees in the cellar, which consisted of a building well constructed and especially designed for the purpose — costing \$1,000.

For three seasons, however, all of my bees have been wintered outside; four colonies being placed in outer cases packed with forest leaves and a fence eight feet high being put about an apiary forty to fifty feet long and of the same width, and I am of the opinion that there are many beekeepers at present wintering their bees in cellars who could winter them with success outdoors. In outside wintering one can leave them earlier in the fall of the year and return to them later in the spring, and they require less care outside than in the cellar. The bees will also be packed and protected during the spring when those wintered in the cellar often suffer from cold and backward weather, after they have been placed on their summer stands, and for that short time it does not pay, or at least it is not considered that it pays, to pack them.

I have adopted a twelve-frame Langstroth hive and to such an extent am I an advocate of this hive that last season I took over one hundred colonies out of ten-frame Langstroth hives and put them in the twelve-frame. By adopting this hive in almost every case the brood can all be put into one hive body; this entails much less work than if two bodies contain brood.

The bees I prefer to all others are Carniolans. Give them plenty of entrance room, ventilation, shade and storage room and swarming can be controlled, but after carefully weighing all the evidences from reliable sources I have reluctantly come to the

* Given at New York State Beekeepers' Convention, Rochester, N. Y., December 1912.

conclusion that these bees may be more susceptible to European foul brood than the average Italian.

In the production of extracted honey I use a queen excluder between the brood chamber and the supers. At the beginning of the honey flow the first super, a twelve frame with only ten combs spread, is put upon the hive, the hives having previously been taken out of the outer cases. When the bees begin to cap honey in this first super, or even a little sooner, if the prospects are good, I put on a second super, putting half the partly filled combs in each super and one set of these combs immediately above the other, filling the other half of each super with empty combs. Placing the combs in this way makes the break to the bees less violent, and in my estimation, gives more satisfactory results. In this way the honey is tiered up during the entire white honey flow.

The combs in the brood chamber are carefully gone through each week, the majority of the bees being shaken from the combs to facilitate examination for queen cells, and if any are found, judged to be from the swarming impulse, they are broken down to prevent swarming.

The honey is taken off, and the bees brushed from both sides of the comb by one operation, the one who does this work holding a brush in each hand. I personally remove the honey from the hive, shaking the bees very largely from the comb; after which it is brushed.

The honey is placed in supers; nine or twelve being piled in a light spring wagon and taken to the extracting house. A twelve-frame reversible power extractor, run by means of a gasoline engine, extracts the honey, a pump carrying the latter, after coarse straining, into tanks six feet high by three feet in diameter. I have eighteen of these tanks with a tight cover and honey gate, and I like this method of caring for the honey so well that six more have been ordered for the coming season. They hold 3,000 pounds or more each.

The coarsest wax, etc., having been strained out, the balance rises to the top of the tank and in a few days time is skimmed off. The honey is then ready to be put into the vessels in which it is to be sold.



FIG. 96. R. F. Holtermann

Practically no honey is extracted from the brood chamber. If there is no robbing, the empty combs are put upon the hives as soon as empty; otherwise they are kept in the extracting house until the latest moment in the day that I consider it possible to return them all before twilight.

In closing, let me point out that very pungent smoke should not be used when removing combs to extract. Its use tends to give a smoky taste to any uncapped honey, or at least taints the honey which drains from the cappings, and for that reason should be avoided.

MARKETING EXTRACTED HONEY*

FRED. B. LOUCKS, LOWVILLE, N. Y.

The selling of extracted honey like that of many other commodities, is a trade by itself. Extracted honey is one of the articles of diet not generally called for, but must ever be kept before the public and given a sightly place on the shelves or counters. Other articles of this class are thoroughly advertised, which tends to keep the public thinking, and once the attention is turned toward honey, it is usually comparatively easy to make a sale.

First, your honey must merit or your trade will be short lived. What I mean by merit is that it must be of good flavor, possessed of a heavy body and fairly well colored. Extracted honey that is not cured by the bees will not hold trade. If you are determined to produce that kind of honey, you will be obliged to look up new customers each season.

Honey cured by hot air and ventilation has lost its most delicate qualities — that something which tickles the palate and makes a customer for all time. There is but one trade that will take this class of honey regularly and that is the baking trade, and of course at a lower price. In fact I can not imagine what would become of us as beekeepers without the baking trade, for this is where we dispose of the lower grades.

But as to the table trade, the people who eat the honey and who pay a higher price, how are we to reach them? I should say that would depend on conditions and circumstances. To bottle honey and do it economically one must have quite an outfit or the expense is too great. I am convinced that one-half of the people who bottle are doing it at a loss.

If a man is naturally a good salesman and he has time and inclination, I should advise him to sell his own honey; but few people are so qualified. A salesman must be able to talk freely on any phase of the business which he represents. He must be able to read from the face and general deportment of his would-be

* Delivered at Watertown Bee Keepers' Institute.

buyer what the buyer is thinking, so as to be able to meet any objections or questions he may bring forth. This ability in a salesman gives him great advantage, since he can judge how to present his case in the most taking manner to the particular individual with whom he is talking. There is a difference between selling honey and giving it away. I know of producers who are canning their honey and putting it on the market in such a way that it is not bringing them to exceed seven cents per pound and that to the retail trade. I suppose these people have never figured what they were really getting for their money. This same honey would have been taken by the jobbing trade at seven and one-half cents in large lots and save the producer all his time and trouble.

This class of beekeepers would be doing the craft a kindness as well as themselves to sell to the jobber, because transacting business in this way is demoralizing to the trade and has a tendency to lower prices, which should be avoided. The price of honey can not be raised but let us see that it goes no lower.

Then there is a class who are salesmen. I have personally known several of these who dispose of their crop by peddling to the farmers. Why the farmer? Because as a rule the farmer buys a quantity at a time,—ten, fifteen or twenty pounds, while the village or city family would want to buy only a pound, pint or quart. It takes just as long to sell the small quantity to the villager as the larger to the farmer, also the city and village always have honey in sight, while the farmer buys because his attention is called to it.

The groceryman is harder to sell to because he has several avenues open to him from which he can get honey. If he does not like you or your goods he will quickly let you know such is the case. However, if you are not a good salesman or have other remunerative work, the groceryman is the natural channel for disposing of your honey crop.

In conclusion, I would urge beekeepers to look at the selling of his crop in a business way. Dismiss all enmity for your neighbor beekeeper. Such enmity has prompted many to cut prices year after year until the local trade is ruined or demoralized to a point where there is no profit in it. If you bottle your honey, figure your time worth something and add it to the jobbing price along

with the cost of the bottles, labels, etc. Just as soon as you cut prices you will suffer the results. Produce and offer for sale only the best and have it cured by the bees.

In handling your honey as I have recommended, you will increase the interests of beekeepers in general and will enhance the beekeeping industry in this state.

COMBINING BEEKEEPING AND FARMING*

JEROME R. SNYDER, WAWARSING, N. Y.

The subject I am about to discuss, "combining beekeeping and farming," is a broad and debatable one. We are living in an age of specialism. If any of us were having eye or ear trouble, we would not go to our old family physician for treatment, but would locate some eye or ear specialist. I believe in specialism in beekeeping as well as in any other industry.

The time may come when the income from our apiary is not enough to meet our needs or maintain us as we would care to live. What must be done? The specialist will say "keep more bees, keep better bees." That is all very good. We begin to consider some plans to keep more bees. From past experience we are sure we have as many in our home apiaries as the surrounding country will afford profitable pasturage.

The next thing to do is to start out to look for an outside apiary. After some driving around the country we find a location. It is from five to fifteen miles from home, which necessitates running a business in two sections that distance apart. Now the question arises, "Which would be better, to start this out apiary, which necessarily brings part of your work some miles from home; or combine your beekeeping with farming?" To my mind it can successfully be combined with farming or with special farming such as poultry, small fruit or berries.

The general farmer could plant such crops as buckwheat, alsike clover, etc. That would give pasturage for the bees and the bees in return would be a help to the growing crops and fruit by pollenizing the blossoms.

The combination is an advantage when we encounter unfavorable seasons. I think the first and most careful consideration in this combination is the "man behind the gun." If one finds that he cannot apply himself to the study of different subjects without

* Delivered at the Eastern New York Beekeepers' Association Convention at Kingston, N. Y., 1912.

one interfering with the other, do not combine anything with beekeeping or beekeeping with anything else.

The successful farmer to-day is not the old type of forty years ago. To succeed to-day he must study his farm as carefully as the manufacturer studies his factory or the merchant his store.

My conclusion is this — if a man is a successful farmer he can combine beekeeping and farming, and make a success of both. If he is not a successful farmer he has troubles enough without multiplying them by adding beekeeping to his responsibilities.

BEEKEEPING AS A SIDE-ISSUE IN THE PROFESSION *

REVEREND ISAAC V. LOBDELL, TROY, N. Y.

Father was a beekeeper before I was born. When old enough I became his assistant, helping in the shop and yard. My work was largely in the former, however, and consisted in the usual routine work of folding sections, filling them with foundation, preparing supers for the hive, cleaning honey, etc.

One day I was called from play to help hive a swarm of bees; being barefooted. I put on a pair of father's rubber boots for protection. As the swarm was shaken from the limb to which it had clustered, a good-sized bunch missed the pan held to catch them, dropped down the inside of those boots and mingled with a pair of bare feet. My interest in bees immediately became an all-absorbing passion. I dare say no boy ever relieved his feet of a pair of boots, or made a "get away" for a hundred yard dash more quickly than that barefooted assistant. Perhaps the incident had something to do with my youthful preference for the shop end of beekeeping. Interest in the work of the apiary came, however, in due time.

On my return from college one summer, father gave me three of his strongest and best colonies; this, with a larger share of responsibility in the care of the apiary, brought on an incurable case of real bee fever.

Now I am a minister with a hobby — beekeeping. On my first charge, in the hours spent in my little apiary, I courted good health and made my escape from the worries and anxieties that inevitably beset the path of the young minister.

At present I have about sixty colonies on my father's place, thirty miles from Troy. When I go home for a day or two I find joy in caring for my bees and here I spend July and August, returning to my parish, tanned, optimistic, full of hope and ready for the work before me. Nothing can surpass beekeeping as a side-issue in the profession, and few things equal it.

First. It promotes health. The busy man too often neglects

* Given at Eastern New York Beekeepers' Convention at Albany, N. Y., December, 1912.

proper physical exercise, health fails and a breakdown results. The mind is most active when the body is strong and vigorous. The duties of professional life are exacting and very exhausting, therefore every man should have a side-issue or hobby that will make him forget his cares and worries, take him into the sunshine and fresh air and restore his vigor of body and mind. The blood must flow swiftly if one is to reap success and find joy in the work.

Some, according to personal inclination, turn to fishing, hunting, golf, etc., for recreation and health, others to a different kind of work, as, for instance, the business man to his farm, the office man, clerk, teacher and many professional men to their poultry, garden and fruit, and still others to their bees. Not idleness, but change of work and interests bring rest and health.

Lift the cover of a hive and study the life of that busy, hustling community, see the bees drop before their homes, laden with pollen and honey; follow their winged flight to the fields of flowers, sweet with nectar, and you will be under such a hypnotic spell that the sense of time, and all worries and cares vanish as the dew. Beekeeping is one of the most fascinating of all occupations and pays big dividends in health and pleasure.

Second. Beekeeping is light, clean work and one may keep as few or as many colonies as time, inclination and ability permit. Many women keep bees and do all the work required. There is little or no heavy work in connection with keeping a few bees and much of it can be done, if careful, without stopping to put on old clothes or overalls.

Men living in thickly settled communities can readily keep from one to a dozen colonies on the roof or in the back yard of their homes, caring for them in spare moments. Those living in the country and more favorably situated as regards room and time could care for a much larger number.

Third. Beekeeping is a side-issue, a hobby, a sport, that pays dividends, not only in pleasure and health, but also in cash. One or two colonies of bees will supply your table with honey, and if you keep a few more colonies, friends will be glad to help you dispose of your surplus or it can be sold at a good profit.

The financial returns from beekeeping will depend upon the number of colonies, the kind of season, and the skill of the bee-

keeper. If located in a good honey section, with an apiary of fifty to a hundred colonies, beekeeping as a side-issue should prove helpful in providing for the rainy day or make possible pleasures otherwise denied.

Beekeeping is full of potentialities for the professional man and especially for the minister in charge of a rural church. The rural church problem is a vital and pressing one. The scope of church work is enlarging and methods are changing. The country minister must know the problems of the community, he must understand the "rural mind;" he must be a leader in the fight for economic as well as for social and spiritual salvation. The minister that spends all his time in his study with his books and in making professional parish calls will never get the "rural view point." That knowledge comes from sharing a common lot, manual labor and contact with the soil.

Beekeeping will give the minister a point of contact with the work-a-day life of the community. Able to stand forth, a skilled laborer, he will command a greater faith and a larger hearing among others that labor.

The country parish offers great opportunities for service, but it is a service that does not yield great financial returns, in very many instances not even a fair living. Facing such conditions, the value of beekeeping as a side-issue becomes self-evident. I dare say that many ministers having acquired experience and skill, by properly systematizing the work of parish and apiary, could, without destroying their professional efficiency, keep from one to two hundred colonies, and those colonies would help tremendously in making ends a little more than meet.

Mr. Beekeeper, for pleasure, health, and for the sake of his pocket-book, urge your minister to keep a few bees, and he in turn will work out with you more efficient methods, and help you to establish beekeeping as one of the most skilled and desirable of agricultural pursuits.

AN EASY WAY TO RAISE A FEW OR MANY GOOD QUEENS*

H. L. CASE, CANANDAIGUA, N. Y.

Take an empty brood comb that has had brood in it once or twice and place it in the center of the colony containing the queen from which you desire to breed. If this is at the time of year when the queens are laying to their full capacity take the card out and examine it on the fifth day after placing it. Should the larvae and eggs extend two-thirds across the card it is ready for use; if they do not, replace it in the colony and it will be ready the next day. When taking out the card for preparation be sure that you keep it warm and do not allow it to become chilled. If the day is warm it will not chill, but do not leave it exposed to the hot rays of the sun. Should it be a cool or cold day, use artificial heat and take it into a warm room for preparation.

Lay the card down on a table, and beginning at the lower edge of the brood patch, mark the comb with a sharp knife lengthwise of the frame in rows containing a row of one cell and a row of two cells alternately, cutting to the midrib. With a sharp chisel shave off the cells from the two-cell rows down to the midrib; then you have the one-cell rows left.

Be sure to destroy all the eggs and larvae where you have shaved off the comb, a match is good for this purpose. Then commence at the end of the row of cells left standing and leave the first egg or larva and destroy the next two, leave the next and destroy the next two and so all over the card.

Next, take an empty super and drive three eight d nails on the inside of the super one in each end and one on each side about two and a half inches from the bottom. These are to lay your prepared rack on with the prepared cells pointing down. The cells are to be raised only on the prepared side of this card, the eggs and larvae on the other side of the card are not to be disturbed. Lay the card on the nails driven inside of the super and cover up the top of the rack as it lays in the super with a good warm blanket, letting the blanket come right down tight to the comb.

* Delivered at the New York State Beekeepers' Association, Syracuse, N. Y., January, 1912.

Your card is now ready for the bees to perfect the cells. Next select a strong colony full of brood and young bees and remove the queen and all the brood, placing the brood and queen into another hive. Fill the hive with empty combs or sheets of foundation or starters. Be sure if there is no honey coming in, that a card of honey is given them, also that they are fed honey or syrup liberally three or four times while they are building the cells.

If you have a place to use this brood and queen shake the bees off of it; if you wish to make an extra colony of it or return the brood and queen to the colony after they have perfected the cells, you must leave enough of the adhering bees to take care of the brood.

Now place your super with this prepared card on the broodless and queenless colony the same as you would for surplus honey. The cells will be ready to use the eleventh and not later than the twelfth day after putting the super on. When you go to take the cells out to use remove the quilt, raise one end of the rack carefully, blow in a little smoke under it and you will find the space in the hive between the rack and the top of the frames full of bees. Blow a little smoke on them to drive them back off the rack into the hive. Then you can remove the rack, and with a bee brush, brush most of the adhering bees off, being careful not to hit the cells with the brush. Keep the rack right side up as much as possible with the cells pointing down, and carry to some suitable place to cut out the cells.

The cells in the center where the larvae were located will be in advance of those on the outside. The ripe cells may be distinguished by the bees having gnawed the ends of the cells. Should there be enough of these for a day's use, remove them carefully by cutting clear through the comb and return the card to the cell building colony again.

Now the cells can be used by putting them into nuclei or they can be used for requeening new colonies where the old queen has been removed the day before. Use a cell protector in either instance leaving this comb as the base of the cell. Always handle the cell by this base, being careful never to touch the end of the cell.

In two days the cells which were returned to the colony will be ready for use. If there are any small or inferior cells, which is apt to be the case where they raise a large number, they can be destroyed.

Now if you have not disposed of the brood and queen, which you took away from the cell building colony, it can be put back or united as it originally was, only the queen will have to be introduced the same as a strange queen. If you have disposed of the brood and queen in other ways, they must have a card or two of brood and another queen.

If you want to raise another batch of cells raise them on another colony; never use the same one twice. The queen will lay in a clean comb sooner than she will in a dirty one. If you raise the cells during the honey harvest, the queen will lay faster than she would if you raised these when she was not laying to her full capacity. You must use your judgment in regard to these matters.

One of the great advantages of this plan, over other plans, is that the nurse bees can spend all their energy on these cells, having to care for no other brood. Another is that you are sure of perfect queens because they have no larvae too old to raise queens from. If you want to raise but a few cells do not leave the card so long in the breeding colony.

There has been over a hundred cells raised on a single card at one time. If you want to raise good, prolific queens you must observe these cautions strictly.

BEEKEEPING AS AN AVOCATION FOR WOMEN*

HETTIE E. HOFFMAN, CANAJOHARIE, N. Y.

Some time ago I heard a man remark, "There is no occupation under the sun where women do not crowd in now-a-days." The man was mistaken. Women are not crowding in, they have long arrived and taken their place side by side with men, efficiently helping along with life's work. In one respect the man was right; there is hardly an occupation under the sun with which women have not or are not trying their luck. Beekeeping is one of the many. How far back there have been women beekeepers, or how many there may be now, I could not tell; but I know that bees can be kept by women as successfully, both financially and otherwise, as by men.

There has been much nonsense written in papers about a veilless and gloveless, as well as laborless, lucrative beekeeping for women, children and invalids. Bees can be worked without veil or gloves, I admit, but the woman who embarks in beekeeping with an idea of taking her fancy-work into the apiary and sitting contentedly watching her bees gather the honey for her, will soon conclude that if she wishes to realize the profit from them she is anticipating; she would better don veil and gloves and do some honest work; do it when her interests demand it, and not only at times when the bees happen to be in the mood to be worked without antagonism.

When I was requested to write this paper on "beekeeping for women," I found the only thing I could tell was my own experience as a woman beekeeper; this I have endeavored to do without any attempt at rose-coloring or discouragement.

When my father died, several years ago, mother and I suddenly found ourselves with 225 colonies of bees on our hands, the principal care of which depended on me. Although an experienced beekeeper's daughter, I was disgracefully ignorant of the proper management of bees. Father had always had help to work his bees, and the honey-house work had been my share. I

* Delivered at a Bee-Keepers' Institute at Utica, N. Y.



FIG. 97. Miss Hettie E. Hoffman

went near them as little as possible, as I was about as fearful of a bee sting as of a snake bite. With the exception of a few times when I had gone out with father to smoke the bees for him and do a little handling, I had never ventured into the beeyards.

The first thing I did was to get a pair of good, safe rubber gloves. They were so stiff my hands felt as if they were done up in splints, and gave me more discomfort than a goodly number of bee stings would have done. Fortunately they did not last long, they soon began to split and break. I have since found a thin leather or light canvas glove is best suited for the work.

The spring of 1907 was late and generally unfavorable for bees in our locality. Spring dwindling had reduced our number of colonies to about 200. Of these we moved 80 to an out-apiary on May 24. Apple trees were then just beginning to blossom, and the bees by this time having become alarmingly light of stores, literally filled up during the bloom.

Some time later when I went to work this out-apiary, the first thing that greeted me on my arrival was an immense swarm of bees high up in an apple tree. While I was lighting up the smoker and getting ready for work, another swarm came tumbling out. I hurried to look for the queen, and back of me came another, and still another. The whole air seemed filled with swarms. I felt like swarming out, too, and leaving the bees to their own sweet will. I found consolation, however, in the knowledge that I had faithfully clipped every queen's wings early in the spring, and that they could not get away from me no matter how hard they tried. I had read in a bee book that it takes sixteen days for a queen to hatch from the day the egg was laid. On this I relied. I went through my bees and assiduously ripped out not only the queen-cell, but every queen-cell cup that had anything in it resembling an egg. When on the twelfth or thirteenth day after this I again visited the beeyard, confident that I was getting around in plenty of time, I was painfully surprised to find many young queens hatched. More swarms had taken to the woods or filled neighbors' dry-goods boxes than I should like to tell. I indignantly concluded that there was something entirely wrong and misleading about those bee books. Had I perused more carefully I would also have read that when bees have larvae they will rear a queen in ten days.

The first summer was hard, and we made many mistakes. To make matters worse it was a poor season in our locality, owing to the extremely late spring and succeeding severe drouth. From our 200 colonies we harvested slightly over 6,000 pounds of comb honey, and about 2,000 pounds of extracted.

The season of 1908 again proved a poor one, owing to the same conditions of drouth as in the previous summer. But 1909, however, gave us a good crop of fine-quality honey.

I found that 200 or more colonies were more than I could properly manage with numerous other duties depending upon me, so we gradually reduced our number to about 170. From these we harvested, the past season, 11,500 pounds of comb honey, and about 2,200 pounds of extracted.

The work in producing these crops was all done by women, with the exception of putting the bees in and out of their winter quarters, moving them to and from the out-apiary, and drawing the honey to the freight house when it was ready for shipment. For this work we hire men from the neighborhood.

Mother and I make all our supplies, including comb foundation, and we do the extracting. My only help in working the bees is my sister, during the two months she is with us. A 15-year-old niece assisted with the finishing of the sections the past season.

Beekeeping for women, although a healthy, and for the most part pleasant occupation, is by no means all easy work. To carry tons of honey from the hives into your honey house, or bend all day over bee hives, handling and shaking heavy combs, would soon scatter illusions to the winds, and probably end in prosaic backache and kindred complications for a woman not accustomed to strenuous work. For a woman to plunge into beekeeping with the hope of at once deriving a competent income from it would, in most cases, end in discouragement and failure. If, however, she is content to begin with a few colonies, and study the habits and management of her bees before she ventures deep, she will in time find it a remunerative business. She will also find her endurance growing with her colonies, for cultured woman is but the weaker sex because for centuries she has pampered herself, and allowed herself to be pampered. The peasant women of Europe who go into the fields and work,

shoulder to shoulder with their men, are as strong as men, and the women of savage tribes are fully capable of performing the burden of the work thrust upon them. The practice of wheeling a wheelbarrow to and from the beeyard is better exercise for gaining health and strength than swinging dumb-bells or subjecting the body to various contortions in physical-culture practice.

Remuneratively compared with other occupations, beekeeping has its advantages as well as its disadvantages. A woman, able to work, can successfully handle from 125 to 150 colonies of bees with but little extra help. In a fair season, if properly worked, they will net her an income quite a little ahead of her sister who teaches, or works in factory or store. But to the beekeeper every year does not bring a good crop. The season for the actual honey flow is comparatively short, and if during these few weeks the weather is unfavorable, or as is sometimes the case, the blossoms yield little or no nectar, the crop will be short, or even a total failure, manage or work as faithfully as you will. Then there is capital invested, and the responsibility and risk of ownership, the burden of which the employer carries for the woman working for wages. But, while for the wage earner, in most cases, it is an all-year-around monotonous performance, for the beekeepers, after a summer of outdoor life comes a period of rest. While your bees are taking their long winter sleep they need little if any attention. Certainly the wise beekeeper will get ready as many supplies during the winter months as possible, if he or she does not wish to be caught in a summer rush that is anything but pleasant. Even this working ahead will leave plenty of time for rest and recreation.

The woman who keeps bees lives and works at home, and can attend to her household and family duties besides her bee work, even though some minor details may be neglected during the busy season. There is much easy, agreeable work connected with the business that will keep the growing boy or girl out of mischief.

There is always a ready market for good honey. Dealers are usually looking for comb honey put up in neat, attractive packages, and properly graded. This work is especially adapted to women. The best way to dispose of a crop of comb honey is to ship it as early as it can be gotten ready for the market. Sell it

outright for cash, if possible; if not, ship it to a reliable commission-house. Nearly all our extracted honey is sold at home. This honey is put up in five and ten-pound pails as soon as extracted, and allowed to granulate. The labels on our pails tell our customers that pure honey will granulate; they also give directions to liquefy the honey if so wanted, and we have yet to hear of a complaint of "sugared honey."

The woman keeping bees can, if she will or must, do all her own work. A woman cannot very well farm it alone. She must hire men to do the heavy work, and by so doing she becomes dependent.

While beekeeping is not a "get-rich-quick" business, and probably never will put man or woman in "millionaires' row," it will provide a comfortable income for the right man or woman. It is an interesting, ever new and broadening study, bringing one close to nature, and for the beekeeper the everyday life easily becomes the ideal simple life.

BEEKEEPING FOR WOMEN *

MRS. C. D. MINER, LIMA, N. Y.

Sometimes I wonder if many women know what a delightful and healthful occupation beekeeping is for a woman. In these days, when so many women must be bread winners, why do not more of them take up outdoor work, as it means so much in the way of fresh air and sunshine, better appetite and sound and refreshing sleep, which we know bring good health and a sunny disposition.

No woman who is nervous and ailing most of the time can make the happy home all good men and women crave and so few have. I would have my sisters get out in the sunshine, become interested in the honey bees and learn to know and love them as I have.

Do you know that each individual hive is a distinct family with its needs just like a human family? If you become acquainted with them, find out how to supply their needs, they will thrive and give you a nice surplus of honey. If you feel that you must work in shop or store, in the schoolroom or even in your own kitchen eight or ten hours per day, get a swarm of bees, put them in your back yard or even the attic by an open window where they will not be disturbed; then in your leisure time learn to know them. They will soon become a rest and refreshment to you, taking your mind entirely away from the trials and vexations of the day.

If you wished to learn a new embroidery stitch, or how to successfully fire your hand painted china, or the latest kink in cake making, you would study. Go out of doors, study the honey bees. You will find excellent text books on the subject and the kindest of friends among the apiarists to help you get started.

Beekeeping is like the study of music, you never get to the end. There is always something new and interesting to learn. Any day you may be called upon to use all the common sense, tact and perseverance you possess, in the care of your bees, but it will pay, not only in good health, but in a fat pocket-book.

*Address delivered at the Monroe County Beekeepers' Convention and Institute, at Rochester, N. Y., March 7, 1912.

WINTERING BEES IN THE CELLAR*

N. D. WEST, MIDDLEBURG, N. Y.

The one most essential point for the successful wintering of bees is to have a good colony of bees to begin with; a colony of bees in a good hive, with a goodly number of young bees that have been reared late in the season, so that they have not worked out half of their life before the winter begins.

See that they have 25 or 30 pounds of good honey in their hives, and about the middle of November carry them into the cellar. Properly place them according to the number of colonies you have to winter, and the size of the room that you have for them. If the ventilation is right, and the temperature from 40 to 45 degrees above zero, the bees are as sure to winter well as are other live stock on the farm.

A few days before I put my bees into the cellar, I weigh each hive with a pair of hanging spring scales that will weigh one hundred pounds or more. I use a little lever device to hang the scales on, and with a pair of hooks properly made, the hives are easily lifted and quickly weighed. I mark the weight of each hive on a tag tacked on the front of it.

When all the hives are weighed, those having less than 25 pounds of honey, are supplied by giving them extra combs of honey that I have on hand, or by exchanging combs with those hives that have honey to spare. If I have not sufficient honey in the combs to winter the whole apiary, I feed sugar syrup to make up for the deficiency. It costs me more to feed syrup than it does to have the bees store their own honey in their combs as they gather it from the fields, for winter use.

The changing of combs should be avoided as much as possible in apiaries that have traces of "foul brood."

If there are any nuclei that need uniting, I unite them on a cold, frosty morning in the fall of the year, and see to it that they have bees and honey enough for a good swarm. The bees thus treated will not fight, and will winter as well as the rest.

* Given at the Eastern New York Beekeepers' Convention, at Albany, N. Y.

To further prepare for wintering the bees, I build a platform in the cellar about eight inches high, as wide as the hives are long, or a little scant, and about four inches from the cellar wall. I pile my hives four or five hives high, and have the back end of each two inches higher than the front. This will cause any water that might accumulate in the hive to run out; and will also give the bees a better chance to get their dead out of the way. This arrangement applies only where fast-bottomed hives are used. When hives without bottoms are employed the bees will winter just as well by piling the hives level, except that a stick one inch square on top should be put at each end of the hive. Set the next hive on that, and so on. I leave a space to walk between each row of hives in the cellar.

I have most of my hives fitted with fast covers and bottoms when transporting them into the cellar, and close the entrance to the hives so that no bees can escape. I draw the most of them to the cellar way on a wagon, and then run them down a chute into the cellar. I know of a beekeeper who piles them up while two other men go after another load. Any available help can do this.

When all of the bees are in the cellar, I light up a large-sized smoker and smoke the cellar full of smoke. In about three moments later, I open the entrance to all of the hives; the smoke will keep the bees from rushing out when the entrances are removed. I give a ventilation a half-inch high, and clear across the front end of my hive.

Most of the cellars under dwellings are used for other purposes also. In this case the opening and closing of the doors by members of the family furnish all of the ventilation that is needed for the bees. It is well to have some kind of a partition put up between the vegetable room and the place where the bees are kept, so that the lamp light used by members of the family in getting their vegetables will not disturb the bees; especially toward spring when they begin to get uneasy. If the bees do grow uneasy, the outside cellar door may be opened cool nights to cool them off, except when the south wind blows.

Some cellars are dry and warm, while others are damp and cold. Some have running water through them, and yet are not damp cellars, such as would cause things to mold. We must learn how

to winter our bees in the particular cellar we use. Learn when it is best to use quilts, or boards over the brood hive, etc. The best cellar that I winter bees in has water running freely in a ditch just outside of where the bees are located, and it runs on three sides of the space used for them. In this cellar the bees will remain quiet until late in the spring — I once kept them in until May first. I usually prefer setting bees out early in the spring but not always. This is the most delicate time of the beekeeping business, since we do not know just what the weather is going to be. If I can get my bees out quite early, and they get a good cleansing flight, without wasting bees very much, I feel sure that I have wintered them well. I then prefer to have the weather keep cool for two weeks, so that the bees will not fly very much, because after the bees have had a day or two of good cleansing flight, the queen begins to lay eggs quite freely. We need these old bees in the hive to care for the early brood. When the old bees begin to fly out freely every day, they die off very fast, but if we have the young bees and brood coming on to take their places, we will have stronger colonies by May 15 than if we had set our bees out so late in the spring that they could fly every day and gather honey and pollen. There are some exceptions to this rule.

After the bees are set out on their summer stands, I like to walk out into the apiary, some sunshiny day when the bees begin to fly out in a natural way, and watch them for a time to see that there is a goodly number of bees flying from each hive and that the entrances are clear of dead bees. Then I look at the tag on the hive to see how much honey they had last fall. If I feel sure that they have enough honey and plenty of flying bees, I just let them alone. I do not open many hives in early spring, if they have been well tended in the fall and have wintered well. I do not unite weak swarms very much in the spring of the year; most of my uniting of colonies is done in the fall. I unite bees as I please during the summer to carry out desired notions. I winter 70 colonies in the chaff-packed hives, out of doors. Sometimes they winter as well or even better than those wintered in the cellars; but on the whole, I consider cellar wintering the safest, cheapest, and best mode of wintering bees in this climate.

WAX PRODUCTION*

CHARLES STEWART, JOHNSTOWN, N. Y.

Wax has played an important part in the arts and sciences in past ages, but beeswax from its peculiar qualities seems to be preferred to either vegetable or mineral wax, and was regarded by those who kept bees as an important item on the cash account. It is now regarded by up-to-date apiarists more in the light of a by-product from the fact that it pays better to run the bees for honey than wax except in the Hawaiian Islands where they found it profitable to use the very cheap grade of sweets gathered by the bees for that purpose.

It was once thought that the pollen gathered by the bee was converted into wax but later it was proven that it was unnecessary to its production.

In fact the bees gorge themselves with honey and cluster in the hive until the wax exudes in delicate scales from the under side of the abdomen, after which it is made into comb. Later from this comb is obtained the beeswax of commerce, and the writer looks back over forty years of experience along this line to secure the maximum amount of wax.

The early methods of rendering wax by boiling the combs in a sack in a kettle of water and applying pressure after melting was wasteful and was succeeded by various devices using steam, which secured 70 to 80 per cent. of the wax. Still too much to lose but not so much loss as by the old method of building a fire around a large iron kettle and boiling the combs in this manner, when a very large amount of the wax was lost by burning on the sides of the kettle.

Finally some genius thought of the method of cider making and built up layers of comb in burlap sacks with slatted wire cloth between each layer. These were placed in a large, strong galvanized tank with plenty of water on the stove and heat applied. After the mass had become thoroughly heated, a powerful screw pressure was applied and the wax rising was drawn off.

* Given at the Fulton-Montgomery Counties Beekeepers' Convention, at Amsterdam, N. Y.

Up to the present writing this method seems to give the best results, although the writer found that after all wax had apparently been recovered from the mass a very good percentage could be obtained by allowing the fire to die down and the mass gradually cool which seems to allow the remaining wax to rise.

The wax recovered from old combs by this method is of a dark color and should be melted in clean water to cleanse it as well as to lighten its color, always being careful not to use an iron vessel, as it will stain the wax a dark shade.

Steam may be used in connection with wax rendering by heating the water, but care should be taken not to bring too much steam on the wax or it will cause it to granulate, when it is no easy matter to cast it into solid cakes unless it be run through a solar wax extractor which is a fine thing, especially in an out apiary where waste combs can be placed in it as gathered and the sun does the rest. This is not an economical way of rendering, and the residue should be saved for the hot water and pressure system.

While New York State leads in agricultural matters it is a fact that thousands of dollars in wax are wasted annually and it will pay to gather up the slum gum or buy the combs from your neighbors and save what is usually thrown away.

REGULATING PRICES OF HONEY*

W. D. WRIGHT, ALTAMONT, N. Y.

The question, "What method can be adopted to maintain prices on honey?" has been put to me. This is a difficult problem and I do not expect to solve it. The question appears to me to be somewhat in the abstract and not covering the matter fully.

It certainly will be no trouble to maintain present prices for this season, and the beekeeper is inclined to consider them fairly good for the reason that for a couple of years a slight advance has been experienced, attributed, no doubt, to the reduced production caused by adverse weather conditions.

The prevailing high prices of other food products should have an influence on the price of honey, which as an article of diet stands far above many other higher priced commodities, but it is not yet evident.

I deem it essential to not only maintain the present prices but when conditions warrant it, to work for a gradual increase until honey producers receive adequate returns for their strenuous labor, and for the capital and brains expended in the business.

The question of price rests to some extent, especially in the retail trade, with the producer himself who frequently sets entirely too low a value on his products, and fails to consider the actual cost in time, labor, investment, etc., with a reasonable margin of profit added.

To many producers, the middleman is a necessity, but without regulation by the producer he is a parasite that is sapping the resources of the business.

The critical period of honey production is at the commencement of the marketing season when the price is established, and instead of the producer and dealer working in harmony, the dealer acts as a bear on the market and places prices at the lowest point that the producer will stand, so that he may readily move large quantities of honey at a good profit to himself. After prices are estab-

* Delivered to the New York State Association of Beekeepers' Societies at Rochester, N. Y., December 19, 1912.

lished there seems to a general understanding among dealers to hold pretty strictly to them.

Early in the season the interests of producer and dealer are in unison, since both desire a good crop of honey; later when that end is reached the ways diverge until finally they are almost antagonistic.

Our country is so extensive and climatic conditions so varied that the honey crop is harvested at different periods, so that it would be almost impossible and impracticable to consider the entire yield in fixing approximate prices; but since the bulk of the supply is produced in the northern states and California, I believe a fairly complete report from these sections would enable a representative body of producers to reach a reasonable conclusion as to what the market would stand and afford a reasonable return to the beekeeper.

These results can be attained only through cooperation, the method of which must be determined by the beekeepers' organizations.

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CALVIN J. HUSON, *Commissioner*

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Report of Farmers' Institutes

Including Addresses

Year June 15, 1912, to June 14, 1913,
Inclusive

BY
EDWARD VAN ALSTYNE
Director

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FIG. 98. FARMERS' INSTITUTE WORKERS IN CHARGE OF MEETINGS

Standing: F. E. Gott
Sitting: Dr. E. M. Santee

Edw. van Alstyne, *Director*
A. J. Nicoll

G. A. Smith

C. H. Tuck

D. P. Witter

J. H. Batton
Jared Van Wagenen, Jr.



FIG. 99.—GROUP OF NEW YORK STATE INSTITUTE WORKERS

Standing: Jay Gelder
Sitting: W. L. Markham

O. F. Ross
J. G. Curtis

Geo. H. Hyde
Wm. Hotelling

I. F. Rice
R. P. McPherson

M. S. Nye
J. A. Ennis

H. E. Cox
Marion Lewis

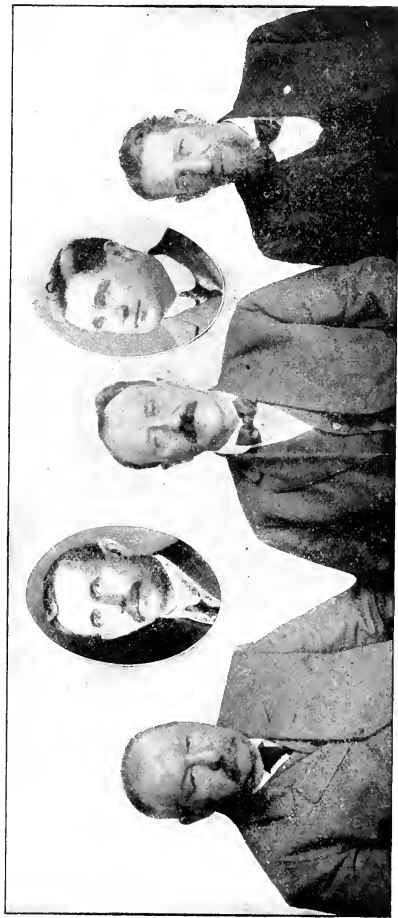


FIG. 100. WORKERS FROM OTHER STATES

Dr. C. W. Broadhead, Pennsylvania

Forest Henry, Minnesota

Chas. D. Barton, New Jersey

Lowell Roudelush, Ohio



FIG. 101. WOMEN WORKERS

Standing, Mrs. Jane S. Johnson Dr. Lucia E. Heaton Mrs. Mary Brainard Mrs. Della A. Jones Miss Etta E. Montgomery
 Sitting: Mrs. Geo. E. Monroe Mrs. Ida S. Harrington Mrs. C. W. Brodhead



FIG. 102. LECTURERS FROM STAFF OF THE NEW YORK AGRICULTURAL EXPERIMENT STATION, GENEVA

Standing: F. E. Gladwin

F. E. Stewart

O. M. Taylor

Sitting: P. J. Parrott

G. A. Smith

U. P. Hedrick



Donald Reddick



E. O. Fippin



C. H. Tuck



Dean L. H. Bailey



J. E. Rice



G. F. Warren



John Bentley, Jr.



R. P. Trask



W. G. Krum



E. W. Benjamin

FIG. 103 — LECTURERS FROM THE FACULTY OF THE NEW YORK STATE COLLEGE OF AGRICULTURE AT CORNELL UNIVERSITY.

REPORT OF FARMERS' INSTITUTES

June 14, 1913.

TO HONORABLE CALVIN J. HUSON, *Commissioner of Agriculture,
Albany, N. Y.:*

MY DEAR SIR.—At the completion of the *calendar* year of my service as Director of Farmers' Institutes ending June 14, 1913, I herewith submit my annual report.

The summaries of work done will differ somewhat from the report presented at the close of the *fiscal* year, September 30, 1913.

Only by setting in order an outline of the actual year of service can I adequately put before you and the people interested, the work accomplished.

I would put on record my appreciation of the support you have personally given the work in all its branches, not the least of which has been the very adequate and efficient office force put at my command, and of the loyal services of all the workers, particularly of the men formerly in charge of the several districts; the New York Agricultural Experiment Station, the State College of Agriculture, the State Department of Education, the State Conservation Commission, and the State School of Forestry at Syracuse University. In addition—and most vital—the people of the state have given the work their most hearty support and cooperation. This has not been confined to those directly engaged in farming, but has come from many in other fields of activities. So great has been and is the demand for service along the different lines of our work that only the liberal appropriations heretofore made, have rendered it possible to comply with them. In not a few cases we have been unable to grant all the meetings asked for, in order to carry out other lines of endeavor seemingly fully as important or even more so than the lecture work. With a reduced appropriation the coming year, the people are, in many cases, making possible more work by assisting financially. I shall ask for more of such support.

In the following pages I have endeavored to show in some detail, different lines of work of the Bureau of Farmers' Institutes, by no means confined to holding meetings. Briefly stated they are as follows: Your Director has personally visited forty-six counties to meet the people interested and to arrange for work to be done — four other counties were visited by members of the institute corps, and in the five smaller, less-populous counties agriculturally, the work was arranged for by correspondence; he has attended and participated in the meetings of the New York State Fruit Growers' Association, Western New York Horticultural Society, State Dairymen's and State Breeder's Meetings, Farmers' Week at Cornell, and Farmers' Weeks at the secondary schools of agriculture at Morrisville and Canton; has conducted a four-day meeting in connection with the School at Alfred and three-day round-up meetings at Sidney, Dansville, Albion and Saratoga; attended and taken charge of twenty-seven regular institutes, given lectures before sixteen different assemblies, as well as visited several farms and institutions.

In cooperation with Assistant Commissioner and Superintendent of State Institutions' Farms, Harry B. Winters, three special meetings were held at state institutions located at Binghamton, Utica and Industry. There was a goodly attendance of the people from the surrounding country. These meetings gave the people an opportunity to visit the state farms and see what is being done in the way of crop growing and animal industry. Special instructors addressed the meetings on the work that was being done and on agricultural themes that were of particular interest in the localities. So successful were these meetings that we have been asked to hold others the coming season.

One very important phase of the work is personal correspondence in the way of agricultural advice, not alone to farmers but to all sorts and conditions of men and women, not only within the state but from outside its borders. This work is constantly increasing and helps to bring the department into close touch with agricultural conditions, where we can often render personal service by way of cooperative effort and help to solve individual problems; also in directing seekers after farms to favorable locations, and later giving personal advice and direction — thus often preventing unwise investment and endeavor.

It would seem that for some time to come the original line of work — that of holding institutes — will demand a large meed of attention. As indicated above the demand for such has been greater than we have supplied. Already many requests are coming for this character of work for the ensuing year, and much apprehension has been expressed that there was to be no appropriation for this purpose. My aim has been to place meetings in the smaller places, many of which have never before had institutes or anything of like character; where the people have not been able to avail themselves of present day advantages. In response to some seven thousand circulars sent out during the summer of 1912, inquiring as to agricultural conditions, I have been able to get in touch with such places, of which there are a surprisingly large number. That so many of the institutes have been held in small places where there was not a large attendance of village folk not vitally interested in farming, as is the case in the larger towns, coupled with the fact that in February the ice harvest had to be gathered over the entire state in about ten days, accounts for the slightly decreased attendance under the previous year. The follow-up work and that relating to cow testing associations (put in my charge January 1, 1913) are explained in detail in this report.

The Bureau has been in close touch with the farm bureau movement, rendering financial aid to those first established, and assisting in their organization in several counties. I find the farm bureau agents most valuable assistants in their respective counties, and am in every way possible cooperating with them, I am sure, to our mutual advantage. My idea is that the work of the Bureau of Farmers' Institutes and that of the farm bureaus should eventually be coordinated.

In December, 1912, Bulletin No. 42 was issued, containing something over one hundred pages, made up of abstracts of addresses given at the institutes. These had previously been printed on separate sheets to be distributed after delivery of the address.

In February, 1913, Bulletin No. 44, consisting of two volumes, of over six hundred and fifty pages, was issued. This is made up entirely of questions and answers, covering the entire field of agriculture, beginning with the soil, then the various crops, fruits and flowers, live stock, and ending with matter pertaining to the

home and rural life. This bulletin is in great demand and has been termed by one recipient "an agricultural dictionary."

I would particularly emphasize one phase of the work — that of sending a man or woman to localities where no meetings have previously been held, often where it is not practical to place a regular institute; these lecturers discussing for an afternoon or evening some particular subject of vital interest to the community, often something relating to the uplift of rural life. This work, with participation in the rural life meetings, I consider a most important and necessary part of the work.

Through all these lines of endeavor I have had always in mind the statement of Dr. Jordan that "The art of agriculture will never rise higher than the man who tills the land."

All of which is respectfully submitted,

EDWARD VAN ALSTYNE,

Director of Farmers' Institutes.



IN MEMORIAM

Just previous to the going to press of this report the wires flashed the news of the death of Institute Conductor Fred E. Gott. Therefore, I hasten to record therein this tribute.

Mr. Gott was born October 13, 1851, at Beachwood Farm, Spencerport, Monroe County, where his grandfather settled early in the nineteenth century, when western New York was a new country. Something over a year ago Mr. Gott was offered an attractive price for this farm and, although he had no sons to succeed him and was beginning to experience the heart trouble which proved fatal, he refused the offer and chose to die where he had lived and labored. Here his life was spent. He drained the fields which were unproductive and thus increased their yield manyfold, and planted orchards. All this he did while burdened with debt; but lived to see his outlay justified and to enjoy the fruits of his labors.

He was educated at Spencerport public schools, Parma Institute and Brockport Normal.

For thirteen years he was justice of the peace. In 1891 he was elected supervisor of the town of Ogden and held the office seven years. In 1892 he was a delegate to the National Republican Convention at Minneapolis. In the fall of 1896 he was elected to represent his district in the Assembly. He was a member of the Grange, also of Etolian Lodge, No. 479, F. & A. M. For over thirty years he has been a member of the First Congregational Church at Spencerport and was at one time superintendent of the

Sunday school. He was always actively interested in whatever pertained to the civic welfare of his town, county or state.

For the past twelve years he has been connected with the Farmers' Institute work of the state as lecturer and conductor. For three years — until the districts were done away with on the writer's appointment as Director — he had entire charge of the work in the twelve counties bordering on the Great Lakes and in western and central New York. As the writer has visited these counties, he has been gratified to find the growing esteem in which Mr. Gott was held by the people in this district.

He was a student of the fundamental principles of agriculture and exemplified the practical workings of them on his own farm. He had the ability to so present both principles and practice that they were easily grasped by his hearers, and the strong personality of the man readily inclined them to follow his advice.

A coworker of wide experience from another state last winter remarked, that he had learned more from Mr. Gott than from any man with whom he had ever been associated. A state worker said recently to the writer, "Mr. Gott was one of the very few men who never exaggerated." Though so strong physically and mentally, he was as modest and sensitive as a child. Only his keen sense of duty induced him to undertake service which made him conspicuous. After a serious sickness in the spring of 1912, he came to Albany with the intention of retiring from the work, but on finding that another was compelled to do so, he remained in the harness against the advice of his physician and nearest friends. In spite of failing strength through loyalty to the work and the writer he took charge of a force the entire past winter with cheerfulness and zeal. As a fitting tribute to such loyal and effective service, he was selected with one accord by his associates to preside at the closing banquet of the institute workers at Ithaca, and most graciously did he do it.

Retiring to his loved farm and home in the spring, he seemed to regain his old-time vigor and did not a little outside service in the way of personal advice, particularly in matters pertaining to orchard and drainage. Not a few trees and many fields will,

for years to come, bear silent but abundant testimony to such work of his.

He had gathered his harvest into his barn. With his own hands, on Friday, the 19th, he sowed a field to alfalfa and had his farm work in a condition to leave on the Tuesday following to give service and advice to farmers along the line of the Northern-Central Railroad. Thus, with his home work well in hand he was prepared to assume the broader duties of the morrow. Who shall say he did not — although on Monday, July 21st, “toward evening, as the day was far spent,” the summons came and the brave heart stopped beating. But the real man, made in the image of his Maker, entered into the abundant life that the Master came to bestow.

On the Thursday following there gathered at his home — with his wife so sorely bereaved and the company of neighbors and friends who knew and loved him well — of his associates in the agricultural work, the writer; D. P. Witter, of Berkshire; A. J. Nicoll, of Delhi; John H. Barron, of Nunda; J. G. Curtis, of Rochester; John A. Ennis, of Pattersonville, and Roy P. McPherson, of Le Roy; to pay the last deserved respect to our fellow-worker. Bright was the sunshine as we laid his body in the beautiful village cemetery just beyond his home, and, though sad our hearts, there was a brightness there also, for what better earthly end could we wish for our brother than that in the place of his birth, with his good wife not distant, surrounded by the accumulative works of his hands for nearly fifty years, with his eye not dimmed and apparently his natural strength not abated, his day's work well done, his house in order, ready for new duties, than to be called higher!

The words of holy writ come to me with a new meaning. “If a man die, shall he live again? Yea, saith the Spirit, they rest from their labors and their works do follow them.”

“There is no death. What seems so is transition.

This life of mortal breath

Is but a suburb of the life Elysian,

Whose portal we call death.”

Edward van Alstyne

TABLE 1. INSTITUTE WORK, JUNE 15, 1912, TO JUNE 14, 1913,
INCLUSIVE

A. REGULAR INSTITUTES

COUNTY AND PLACE OF MEETING	LOCAL CORRESPONDENT	DATE	NO. SESSIONS	ATTENDANCE	AVERAGE PER SESSION
ALBANY:		1912	17	1,082	64
Berne.....	W. S. Schoonmaker, R. D. 1...	Nov. 29	3	253	84
Clarksville.....	Lansing Appleby, R. D.				
	Voorheesville.....	Nov. 30	3	98	33
Indian Fields.....	A. C. Koons, R. D., Coeymans Hollow.....	Dec. 2-3	5	225	45
Selkirk.....	I. L. Kimmey.....	1913 Jan. 13	3	257	86
South Westerlo.....	S. B. Palmer, R. D., Greenville.....	1912 Dec. 4	3	249	83
ALLEGANY:			24	2,104	88
Almond.....	J. E. Kean, R. D.....	Nov. 7	2	149	75
Andover.....	Harry Smith.....	1913 Jan. 28	3	351	117
Belfast.....	J. O. Torpey.....	Jan. 24-25	5	405	81
Black Creek.....	F. D. Stowell.....	1912 Nov. 8	2	136	68
Centerville.....	H. W. Weaver, R. D., Fillmore.	Nov. 14	3	236	79
Canaseraga.....	C. F. Phinney, R. D.	Nov. 15-16	3	210	70
Friendship.....	D. P. Barnes.....	1913 Jan. 27	3	371	124
Shorttract.....	C. B. Jones, R. D. 1, Fillmore.	1912 Nov. 15	3	246	82
BROOME:			18	1,196	66
Chenango Forks.....	C. E. Brown.....	Dec. 4	3	186	62
Deposit.....	G. C. Valentine.....	Dec. 10	3	195	65
Maine.....	G. W. Young, R. D. 2, Union..	Dec. 2	3	165	55
Upper Lisle.....	Fred Purdy, R. D. 1, Marathon.....	1913 Feb. 25	3	155	52
Vestal.....	D. S. Wakeman, R. D. 1.....	1912 Dec. 3	3	210	70
Windsor.....	F. M. Philley.....	Dec. 9	3	285	95
CATTARAUGUS:		1913	26	1,862	72
Allegany.....	J. F. Multrus, R. D. 2.....	Jan. 21	3	218	73
Cottage.....	A. M. Howlett, R. D., South Dayton.....	Jan. 13	3	375	125
Franklinville.....	John Carter.....	Jan. 23	3	189	63
Gowanda.....	Wm. E. Dorson.....	Jan. 14	3	268	89
Ischua.....	E. N. Williams.....	Jan. 22	3	293	98
Leon.....	C. C. Barlow.....	Jan. 16	3	191	64
Limestone.....	M. W. Wagner, Bradford, Pa.	Jan. 20	3	94	31
Randolph.....	E. A. Stratton.....	Jan. 17-18	5	234	47
CAYUGA:			28	2,119	76
Dresserville.....	R. R. Lawrence, R. D. 16, Moravia.....	Feb. 26	3	135	45
East Venice.....	H. W. Taylor, Moravia.....	Feb. 27	3	195	65
Fair Haven.....	Richard Forseutt.....	Feb. 19	2	135	68
Ira.....	O. H. Livingston.....	Feb. 20	3	215	72
Moravia.....	W. D. Curtis.....	Feb. 25	3	161	54
Poplar Ridge.....	Elisha Cook.....	Feb. 28	3	464	155
Port Byron.....	Wm. H. Root.....	Feb. 21-22	3	140	47
Sennett.....	E. D. Crocker.....	Feb. 28- Mar. 1	3	279	93
Union Springs.....	D. B. Hardy.....	1912 Dec. 27	2	104	52
Victory.....	G. T. Brackett, R. D. 51, Red Creek.....	1913 Feb. 21	3	291	97
CHAUTAUQUA:			46	4,113	89
Busti.....	J. W. Sanbury, R. D. 79, Jamestown.....	Mar. 12	3	290	97
Cherry Creek.....	G. H. Wilcox, R. D.....	Jan. 15	3	333	111
Falconer.....	H. H. Harriman, R. D. 83, Jamestown.....	Jan. 10-11	5	280	56
Fredonia.....	R. J. Paschke.....	Mar. 10-11	5	502	100
Frewsburg.....	J. G. Traver.....	Jan. 7	3	308	103

TABLE 1 — *Continued*

COUNTY AND PLACE OF MEETING	LOCAL CORRESPONDENT	DATE	NO. SESSIONS	AT-TEND-ANCE	AVEE-AGE PER SESSION
CHAUTAQUA—Ccncl'd:		1913			
Gerry.....	O. M. Ostrander.....	Jan. 9	3	191	64
Niobe.....	O. E. Cross.....	Jan. 6	3	264	88
Ripley.....	E. S. Taylor.....	Mar. 7-8	5	600	120
Sheridan.....	Miss Bessie A. Merritt, Dun- kirk.....	1912 Nov. 12-13	5	549	110
		1913			
Sherman.....	G. F. Ottaway, R. D.....	Jan. 3-4	5	276	55
Sinclairville.....	Mrs. Jas. M. Harmon.....	Jan. 8	3	238	79
Stedman.....	Geo. G. Swart, R. D. 63, Ashville.....	Jan. 2	3	282	94
CHEMUNG:			15	1,364	91
Chemung.....	G. M. Straitor.....	Feb. 14	3	239	80
Erin.....	C. J. Rosekranz.....	Feb. 18	3	415	138
Horseheads.....	C. R. Shappee, R. D. 3.....	Feb. 14-15	3	228	76
Millport.....	B. J. Parsons, R. D. 2, Horse- heads.....	Feb. 17	3	197	66
Pine City.....	H. C. Howe, 1012 Penna. Ave. Elmira.....	Feb. 13	3	285	95
CHENANGO:		1912	21	1,150	55
Bainbridge.....	Clarence Kirby.....	Dec. 6-7	3	118	39
Greene.....	Geo. W. Lenderson.....	Dec. 5	3	290	97
McDonough.....	H. L. Aldrich, Star Route, Ox- ford.....	Nov. 14	3	120	40
Plymouth.....	C. S. Holcomb.....	Nov. 16	3	230	77
Sherburne.....	H. N. Kutschbach.....	Nov. 8	3	87	29
So. Otselic.....	P. B. Welch.....	Nov. 15	3	161	54
Guilford.....	C. D. Mickel.....	Dec. 6	3	144	48
CLINTON:			17	1,372	81
Chazy.....	Seth Gordon.....	Dec. 10	3	142	47
Ellenburg Depot.....	I. L. Sheldon.....	Dec. 18	3	268	89
Morrisonville.....	W. H. Banker, R. D. 4, Plattsburg.....	Dec. 11	3	191	64
Peru.....	J. L. Clark.....	Dec. 13-14	5	466	93
Saranac.....	Mrs. C. H. Cane.....	Dec. 12	3	305	102
COLUMBIA:		1913	23	1,493	65
Claverack.....	H. J. Miller.....	Jan. 8	3	201	67
Copake.....	John W. Scott.....	Jan. 30	3	229	76
East Chatham.....	R. R. Lant.....	Jan. 27	3	293	98
Germantown.....	Henry Fingar.....	Jan. 6	3	183	61
Johnstown.....	Margaret S. Weeks, Living- ston.....	Jan. 7	3	208	69
		1912			
Linlithgo.....	W. D. Rhines.....	Nov. 22	2	66	33
		1913			
Old Chatham.....	C. S. Ashley.....	Jan. 28	3	146	49
West Ghent.....	E. M. Kittle, R. D., Ghent....	Jan. 9	3	167	56
CORTLAND:		1913	29	2,013	69
Cincinnati.....	A. L. Cook.....	Feb. 27	3	150	50
Cortland.....	A. J. Sears, R. D.....	Feb. 28- Mar. 1	5	399	80
Harford.....	C. W. Conrad.....	Mar. 5	3	241	80
Marathon.....	B. E. Conrad.....	Feb. 24	3	255	85
Preble.....	M. S. Nye.....	Feb. 21-22	3	261	87
Solon.....	H. B. Wadsworth, East Free- town.....	1912 Nov. 23	2	152	76
		1913			
Texas Valley.....	Richard Phalen, Marathon....	Feb. 26	2	149	75
Truxton.....	J. L. Hartnett.....	Feb. 14-15	3	70	23
Virgil.....	F. J. Reas, R. D. 4, Cortland..	Mar. 4	3	169	56
		1912			
Willet.....	John W. Jones.....	Nov. 22	2	167	84
DELAWARE:			21	1,170	56
Davenport.....	W. C. Porter.....	Dec. 18	3	231	77
Delhi.....	M. L. Fuller.....	Dec. 17	3	115	38
Franklin.....	A. W. Rowell, R. D. 1.....	Dec. 20-21	5	198	40
Halcottsville.....	Wm. Vermilyea.....	Dec. 10-11	5	350	70
Roxbury.....	Samuel More.....	Dec. 9	3	157	52
Treadwell.....	A. O. Potter.....	Dec. 19	2	119	60

TABLE 1 — Continued

COUNTY AND PLACE OF MEETING	LOCAL CORRESPONDENT	DATE	NO. SESSIONS	ATTENDANCE	AVERAGE PER SESSION
DUTCHESS:		1913	24	1,435	60
Clinton Corners.....	M. E. Knapp, Millbrook.....	Feb. 12-13	5	264	53
Freedom Plains.....	James Skidmore, Pleasant Valley.....	Feb. 11	3	163	54
Myers Corners.....	F. F. Loop, Wappingers Falls.....	Nov. 21	2	173	87
Pine Plains.....	Smith Thompson.....	Feb. 7-8	5	283	57
Rhinebeck.....	Chas. R. Traver.....	Jan. 3-4	3	182	61
Union Vale.....	R. C. Grannis, La Grangeville.....	Feb. 10	3	199	66
Wicopsee.....	J. S. Warren, Hopewell Jet.....	Feb. 6	3	171	57
ERIE:		1912	26	2,413	93
Akron.....	Herbert Churchill.....	Jan. 9	3	208	69
Alden.....	E. W. Gillmore.....	Jan. 10-11	3	328	109
Boston.....	E. E. Rockwood.....	Dec. 3	3	350	117
Chafce.....	W. A. Briggs.....	Jan. 13	3	228	76
East Aurora.....	Mrs. Frank Adams.....	Dec. 4	3	208	69
Eden Center.....	Horace Landon.....	Dec. 2	3	363	121
Hunt's Corners.....	John Seyfang, Clarence.....	Dec. 6-7	3	296	99
Lancaster.....	W. H. Seitz, Bowmansville.....	Dec. 6	2	76	38
Marilla.....	O. D. Tiffany.....	Dec. 5	3	356	119
ESSEX:		1912	20	1,187	59
Crown Point.....	W. S. Green.....	Dec. 3-4	5	416	83
Jay.....	Mrs. Anna S. Kent.....	Dec. 16-17	5	328	66
Reber.....	E. M. West.....	Dec. 9	3	182	61
Wadhams.....	Geo. K. French.....	Dec. 6-7	4	157	39
Whallonsburg.....	W. H. Soper, R. D.....	Dec. 2	3	104	35
FRANKLIN:		1913	18	1,496	83
Bombay.....	Geo. E. Rockwood.....	Jan. 24-25	5	604	121
Brushton.....	Timothy O'Connell, Moira.....	Dec. 20-21	5	221	44
Dickinson Center.....	N. C. Aiken.....	Jan. 21	3	204	68
Gabriels.....	J. J. Fitz Gerald, Harriets-town.....	Dec. 19	2	157	79
Malone.....	L. L. Foote.....	Jan. 20	3	310	103
FULTON:		1912	9	581	65
Crum Creek.....	Delos S. Hoffman, St. Johnsville.....	Mar. 10	3	100	33
Johnstown.....	Chas. Veghte.....	Jan. 16	3	203	68
Mayfield.....	G. W. Haines.....	Jan. 15	3	278	93
GENESEE:		1913	24	2,042	85
Alabama Center.....	A. E. Norton, Alabama.....	Jan. 8	3	173	58
Bethany Center.....	J. W. Burke, Batavia.....	Jan. 17	3	277	92
Corfu.....	C. D. Silliman.....	Jan. 10	3	301	100
Darien.....	Nelson Harper, Darien Center.....	Jan. 16	3	220	73
Elba.....	Jos. S. Wilford.....	Jan. 6	3	231	77
Le Roy.....	F. P. Hazelton.....	Feb. 28	3	176	59
Oakfield.....	Bryant Taylor, R. D., Batavia.....	Jan. 7	3	222	74
Pavilion Center.....	J. H. Ward, Pavilion.....	Jan. 24-25	3	412	147
GREENE:		1912	14	1,084	77
Ashland.....	A. J. Brandow, Jewett.....	Dec. 7	3	328	109
Catskill.....	D. J. Hanin, Leeds.....	Dec. 13-14	5	222	44
Freehold.....	Geo. M. White.....	Dec. 5	3	219	83
Hensonville.....	Geo. B. Ayres.....	Dec. 6	3	285	95
HERKIMER:		1912	20	1,167	58
Cedarville.....	C. D. Huxtable, Miller's Mills.....	Dec. 6-7	3	64	21
Columbia.....	L. W. Firman, R. D. 1, Mohawk.....	Dec. 6	3	132	44
Dolgeville.....	A. J. Dunckel.....	Dec. 2	3	104	35
Newport.....	Milo Morey.....	Dec. 3	2	146	73
Ohio.....	Eugene Hemstreet, R. D., Coldbrook.....	Dec. 5	3	267	89

TABLE 1 — *Continued*

COUNTY AND PLACE OF MEETING	LOCAL CORRESPONDENT	DATE	NO. SESSIONS	ATTENDANCE	AVERAGE PER SESSION
HERKIMER—<i>Concluded:</i>		1912			
Russia.....	W. H. Hughes, R. D., Barneveld.....	Dec. 4	3	185	62
Van Hornesville.....	Aaron Dingman.....	1913 Mar. 11	3	269	90
JEFFERSON:			35	3,421	98
Antwerp.....	J. W. Kelsey, R. D., Philadelphia.....	Jan. 24-25 1912	3	410	137
Belleville.....	W. S. Martin.....	Dec. 18	3	285	95
Carthage.....	E. G. Lewis.....	Dec. 16	3	270	90
Chaumont.....	A. A. Daniels.....	1913 Jan. 10-11	3	293	98
Henderson.....	James Berry, R. D., 3, Adams.....	Jan. 13	3	186	62
Hounsfield.....	A. J. Horton, Route E, Watertown.....	1912 Dec. 17	3	165	55
LaFargeville.....	A. W. Beckwith.....	1913 Jan. 9	3	255	85
Natural Bridge.....	E. H. Allen, Natural Bridge.....	1912 Dec. 12	2	87	44
Redwood.....	R. H. Hibbard, R. D. 2.....	1913 Jan. 15	3	571	190
St. Lawrence.....	V. P. Comins, R. D. 3, Clayton.....	Jan. 10	3	363	121
Smithville.....	F. R. Babcock.....	Jan. 14	3	308	103
South Rutland.....	H. S. Todd, East Rodman.....	1912 Nov. 20	3	228	76
LEWIS:			19	1,557	82
Barnes Corners.....	H. H. Greene, R. D. 3, Copenhagen.....	Nov. 21 1913	3	216	72
Denmark.....	J. T. Martin.....	Jan. 8	3	292	97
Harrisville.....	Harvey Week.....	1912 Dec. 13-14	3	93	31
Lowville.....	O. F. Ross.....	1913 Jan. 7	3	307	102
Port Leyden.....	F. C. Northrup.....	1912 Nov. 23	1	20	20
Talcottville.....	O. C. Thayer, Constableville.....	Dec. 11	3	202	67
West Leyden.....	F. P. Grubel.....	Nov. 22	3	427	142
LIVINGSTON:		1913	18	1,499	83
Caledonia.....	J. C. Mitchell.....	Jan. 31- Feb. 1	3	190	63
Conesus.....	Chas. McGinty.....	Jan. 28	3	312	104
Linwood.....	J. E. Noble.....	Jan. 31	3	333	111
Livonia.....	H. S. Coe, So. Livonia.....	Jan. 27	3	172	57
Springwater.....	Scott Swarts.....	Jan. 29	3	250	83
Tuscarora.....	M. M. Barron, Nunda.....	Jan. 30	3	242	81
MADISON:			32	2,304	72
Brookfield.....	C. W. Camanga, West Edmeston.....	Feb. 17-18	3	243	81
Cazenovia.....	Jas. A. Lyster.....	Feb. 10	3	165	55
De Ruyter.....	G. B. Burdick.....	Feb. 14	3	298	99
Erieville.....	P. H. Brown.....	Feb. 12	3	200	67
Earlville.....	E. D. Billings.....	Feb. 7-8	3	158	53
Hamilton.....	W. F. Ingalls.....	Feb. 7	3	119	40
Madison.....	Willard Taylor, Sollsville.....	Feb. 6	3	118	39
Nelson.....	David Andrews, R. D. 2, Morrisville.....	Feb. 11	3	327	109
New Woodstock.....	I. H. Hunt.....	Feb. 13	3	308	103
Stockbridge.....	C. E. Love, Munnsville.....	Jan. 3-4	5	368	74
MONROE:			27	3,257	121
Brockport.....	E. W. Brigham.....	Jan. 23-24	5	536	107
Hilton.....	J. B. Miller.....	Jan. 29	3	377	126
Honeoye Falls.....	Jas. M. Heath.....	Feb. 3-4	5	411	82
Mumford.....	A. L. DeNoon, Caledonia.....	Feb. 24	3	162	54
Pittsford.....	D. J. Howard, Henrietta.....	Jan. 31- Feb. 1	5	516	103
Webster.....	Geo. W. Dunn.....	Feb. 17	3	836	279
West Henrietta.....	F. L. Martin.....	Jan. 24-25	3	419	140

TABLE 1 — *Continued*

COUNTY AND PLACE OF MEETING	LOCAL CORRESPONDENT	DATE	NO. SESSIONS	ATTENDANCE	AVERAGE PER SESSION
MONTGOMERY:		1913	15	1,083	72
Canajoharie, Seiber's Lane Grange.....	C. L. St. John, Canajoharie..	Jan. 17	3	246	82
Glen.....	Edgar Van Horne, Fonda....	Mar. 7	3	132	44
Minaville.....	C. B. DeGraff, 286 Division st., Amsterdam.....	Jan. 14	3	283	94
Rural Grove.....	A. H. Dievendorf, Sprakers...	Mar. 7-8	3	165	55
St. Johnsville.....	Bert Klock.....	Jan. 17-18	3	257	86
NASSAU:			4	228	57
Mineola.....	E. V. Titus, Glen Cove.....	Feb. 3-4	4	228	57
NIAGARA:			21	2,634	125
Barker.....	B. T. Swan.....	Jan. 9	3	536	179
Gasport.....	Arthur Hayes.....	Jan. 7	3	403	134
La Salle.....	F. E. Wilson.....	Jan. 4	3	190	63
Lewiston.....	J. C. Duncan.....	Mar. 15	3	354	118
Newfane.....	Mrs. G. W. Butterfield.....	Jan. 8	3	365	122
Pekin.....	C. E. Mabon, Sanborn.....	Jan. 6	3	465	155
Ransomville.....	W. D. Wisner.....	Jan. 3	3	321	107
ONEIDA:			17	1,301	77
Boonville.....	S. B. Sherman, R. D. 3.....	Jan. 6	3	201	67
Camden.....	J. J. Davis.....	Mar. 12	3	294	98
Chadwicks.....	G. B. Smith, Sauquoit.....	Mar. 13	2	140	70
Floyd.....	Mrs. H. S. Brown, Stittsville..	1912 Dec. 10	3	206	69
Knoxboro.....	M. A. Kimball, Oriskany Falls.	1913 Jan. 2	3	253	84
Westernville.....	Stanley Wareup.....	1912 Dec. 9	3	207	69
ONONDAGA:		1913	27	3,603	133
Baldwinsville.....	Fay Giddings.....	Feb. 18	3	494	165
Fabius.....	W. L. Hamilton.....	Mar. 3	3	373	124
Jordan.....	H. J. Rickard, R. D. 1.....	Feb. 26	3	487	162
North Manlius.....	Miss Maude O. Hulbert, R. D., Kirkville.....	Feb. 28	3	245	82
Onondaga.....	L. A. Wiard, R. D., 2, Syracuse	Feb. 19	3	222	74
Otisco.....	Albert Edinger.....	Mar. 1	3	430	143
Skaneateles.....	Geo. A. Hatch.....	Feb. 20	3	432	144
Tully.....	J. C. Reagan.....	Feb. 21	3	565	188
Warner.....	D. M. Dixon, Memphis.....	Feb. 27	3	355	118
ONTARIO:			23	1,807	79
Bristol Center.....	M. G. Goff.....	Feb. 7-8	3	249	83
Bristol Springs.....	E. N. Coyle, Naples.....	Feb. 7	3	278	93
Naples.....	W. E. Springstead.....	Feb. 6	3	196	65
Phelps.....	F. A. Salisbury.....	Mar. 13	3	143	48
Reed Corners.....	James Roat, R. D. 8, Canandaigua.....	Feb. 3	3	323	108
Seneca Castle.....	Levi A. Page.....	Mar. 12	3	237	79
Shortsville.....	R. R. McSouth, R. D.....	Feb. 25	3	195	65
Victor Village.....	A. G. Aldridge, Fishers.....	Jan. 30	2	186	93
ORANGE:			30	1,235	41
Balmville.....	N. C. Barnes, Middlehope.....	Jan. 3	3	162	54
Bullville.....	George Ayres.....	Feb. 20	3	105	35
East Chester.....	A. C. Bull, Chester.....	Feb. 14-15	3	61	20
Goshen.....	C. S. Wells.....	Feb. 18	3	133	44
Monroe.....	W. H. Owens.....	Feb. 14	3	85	28
Otisville.....	Jay H. Smith.....	Feb. 17	3	69	23
Pine Bush.....	Eltinge DuBois.....	Feb. 19	3	144	48
Slate Hill.....	Frank Remy.....	Feb. 21-22	3	40	13
Unionville.....	Mrs. M. B. Stoll.....	Feb. 21	3	326	109
Washingtonville.....	W. H. Bull.....	Feb. 13	3	110	37
ORLEANS:			21	2,454	117
Clarendon.....	Herbert Allis, R. D., Holley..	Jan. 22	3	334	111
East Shelby.....	B. C. Roberts, Medina.....	Jan. 21	3	319	106
Kendall.....	L. M. Wellman.....	Jan. 27	3	290	97
Lyndonville.....	C. H. I. Potter.....	Jan. 10	3	365	122
Medina.....	Jay E. Allis.....	Jan. 20	3	437	146
Morton.....	F. M. Botting.....	Jan. 28	3	369	123
Waterport.....	Dr. R. W. Bamber.....	Jan. 10-11	3	340	113

TABLE 1 — *Continued*

COUNTY AND PLACE OF MEETING	LOCAL CORRESPONDENT	DATE	NO. SESSIONS	AT-TEND-ANCE	AVER-AGE PER SESSION
OSWEGO:		1912	35	3,321	95
Amboy.....	Fred. Jamieson, R. D., Williamstown.....	Dec. 21	2	165	83
Bernhard's Bay.....	H. E. Myers.....	1913 Feb. 14-15	3	215	72
Central Square.....	C. B. Allen, R. D. 1.....	Feb. 14	3	333	111
Hannibal.....	P. A. Welling.....	Feb. 10	3	576	192
Lacona.....	A. R. Stevens.....	1912 Dec. 19	3	152	51
Mexico.....	W. A. Robbins.....	1913 Feb. 11	3	235	78
Orwell.....	Geo. S. Loomis.....	1912 Nov. 18	3	250	83
Palermo.....	M. E. Dolbear, R. D. 4, Fulton	Nov. 19	3	291	97
Parish.....	W. C. Richards.....	1913 Feb. 13	3	238	79
Phoenix.....	W. H. Carrier.....	Feb. 17	3	352	117
Pulaski.....	E. H. Minot, R. D. 1, Richland	Feb. 12	3	315	105
Williamstown.....	E. N. Harris.....	1912 Dec. 20	3	199	66
OTSEGO:		1913	30	3,442	115
Edmeston.....	S. D. Dye.....	Jan. 18	3	190	63
Elk Creek.....	Theodore Knapp.....	Jan. 21	3	290	97
Garrettsville.....	F. L. Mills.....	Jan. 17	3	201	67
Hartwick.....	E. H. Chase, R. D. 3, Coopers-town.....	Jan. 16	3	357	119
Morris.....	Stanley Backus.....	Jan. 20	3	490	163
Oneonta.....	S. L. Cole, R. D.....	Jan. 11	3	277	92
Pierstown.....	G. T. Burnell R. D., Coopers-town.....	Jan. 15	3	327	109
Springfield Center....	F. M. Smith.....	Jan. 14	3	297	99
Westville.....	Geo. Chamberlain, Schenevus.	Jan. 13	2	193	97
Worcester.....	Noah Vredenburg.....	Jan. 21-22	4	820	205
PUTNAM:			9	780	87
Adams Corners.....	G. F. Barmore.....	Feb. 4	3	295	98
Carmel.....	John L. Lee.....	Feb. 3	3	160	53
Patterson.....	E. F. Hayt, Brewster.....	Jan. 31	3	325	108
RENSSELAER:			22	2,352	107
Center Brunswick....	I. W. Abbott, R. D. 1, Troy..	Jan. 10-11	5	499	100
East Greenbush.....	Wm. S. Miller.....	Mar. 3	3	229	76
Hoosick Falls.....	Jay C. Cottrell, R. D.....	1912 Dec. 13-14	5	506	101
Raymertown.....	E. L. Button, R. D. 2, Melrose.	1913 Mar. 5	3	425	142
Stephentown.....	W. L. Cranston.....	Jan. 29	3	209	70
West Sand Lake.....	I. J. Cipperly.....	Mar. 4	3	484	161
ROCKLAND:			5	348	70
Tallmans.....	Thomas Husson, Pomona.....	Feb. 24-25	5	348	70
ST. LAWRENCE:			37	5,461	148
Edwardsville.....	B. B. Lane, R. D., Hammond.	Jan. 16	3	262	87
Fine.....	J. P. Griffin, Oswegatchie....	1912 Dec. 13	2	290	145
Gouverneur.....	Earl Laidlaw.....	1913 Jan. 17-18	5	1,396	279
Hermon.....	W. W. Matteson.....	Jan. 24	3	488	163
Lawrenceville.....	Jerry Hourihan, R. D., North Lawrence.....	Jan. 23	3	289	93
Lisbon.....	C. B. Wright.....	Jan. 17	3	485	162
Madrid.....	J. A. Fisher.....	Jan. 17-18	3	287	96
Massena.....	E. W. Kinney.....	Jan. 21	3	386	129
Nicholville.....	E. D. Beede, Hopkinton.....	Jan. 22	3	388	129
Rensselaer Falls.....	H. B. Hammond.....	Jan. 23	3	338	113
Waddington.....	M. J. Elliott, R. D., Madrid..	Jan. 20	3	307	102
Winthrop.....	Geo. H. Morgan.....	Jan. 22	3	545	182
SARATOGA:		1912	18	1,317	73
Bacon Hill.....	H. C. Peck, R. D. 2, Schuylerville.....	Dec. 16	3	207	69
Ballston.....	W. H. Taber, R. D. 1.....	Dec. 20	3	162	54

TABLE 1 — *Continued*

COUNTY AND PLACE OF MEETING	LOCAL CORRESPONDENT	DATE	NO. SESSIONS	ATTENDANCE	AVERAGE PER SESSION
SARATOGA—Concluded:					
Clifton Park Center.....	J. F. Peek, Rexford.....	1913 Mar. 6	3	152	51
Greenfield Center.....	W. G. Robinson.....	1912 Dec. 19	3	157	52
Quaker Springs.....	J. H. Holmes, R. D. 1, Schuylerville.....	Dec. 17	3	347	116
Mayville.....	W. R. Putnam.....	Dec. 18	3	292	97
SCHENECTADY:					
Delanson.....	A. M. Gaige, Duanesburg.....	Dec. 27-28	9	443	49
Glenville.....	Mina Van Epps, Hoffmansville.....	Dec. 27	3	198	66
Mariaville.....	J. A. Turnbull, Pattersonville.....	Dec. 26	3	126	42
			3	119	40
SCHOHARIE:					
Barnerville.....	A. B. Ryder.....	1913 Feb. 14	16	733	46
Breakabeen.....	W. H. Travis, R. D. 1, Middleburg.....	Feb. 12	3	119	40
Gilboa.....	D. W. Southard.....	Feb. 11	3	95	32
Middleburg.....	W. E. Van Wormer.....	Feb. 13	3	108	36
Sharon Springs.....	R. W. Eldridge.....	Feb. 14-15	4	255	85
			4	156	39
SCHUYLER:					
Beaver Dams.....	Dennis Schuyler.....	Mar. 3	18	2,088	116
Moreland.....	A. W. Russell, Beaver Dams.....	Mar. 4	3	310	103
Odessa.....	C. W. Hausner.....	Mar. 10	3	220	73
Reading Center.....	E. K. Smith.....	Mar. 5	3	498	166
Townsend.....	W. L. Frost, R. D., Watkins.....	Mar. 11	3	418	139
Wayne.....	D. E. Hoover, Keuka.....	Mar. 12	3	355	118
			3	287	96
SENECA:					
Covert.....	Joel Horton.....	Mar. 5	9	671	75
Ovid.....	Lewis B. Jones.....	Mar. 4	3	240	80
Waterloo.....	H. H. Bonnell.....	Mar. 3	3	250	83
			3	181	60
STEPHEN:					
Addison.....	L. J. Haynes, R. D. 2.....	Feb. 12	51	4,260	84
Campbell.....	John C. Tharp, R. D. 2.....	Feb. 11	3	348	116
Caton.....	H. D. Walden, R. D. 2, Corn- ing.....	Feb. 10	3	235	78
Cohoeton.....	Chris Miller.....	Feb. 7	3	360	120
Greenwood.....	T. N. Blair.....	Jan. 31	3	471	157
			3	310	103
1912					
Hedgesville.....	Marion Lewis, R. D. 2, Cam- eron Mills.....	Nov. 20	3	170	57
Hornby.....	Guy Ovenshire, Beaver Dams.....	Nov. 21	3	283	94
1913					
Hornell.....	N. W. Cone, R. D. 5.....	Jan. 29	3	215	72
Ingleside.....	C. A. Graves, R. D., Pratts- burg.....	Feb. 6	3	225	75
Jasper.....	A. L. Whiting.....	1912 Nov. 18	3	210	70
1913					
North Urbana.....	H. M. DeGraw, Hammonds- port, R. D. 4.....	Feb. 4	3	240	80
Prattsburg.....	A. S. Cook.....	Feb. 5	3	291	97
Rathbone.....	Merritt Baker, R. D. 1, Addi- son.....	Jan. 31- Feb. 1	3	120	40
Savona.....	L. W. McDowell.....	Feb. 7-8	3	108	36
Stephens Mills.....	L. K. Robinson, Hornell, R. D. 2.....	Jan. 30	3	253	84
Thurston.....	C. N. Risley, R. D. 3, Camp- bell.....	Feb. 3	3	228	76
1912					
Woodhull.....	James Gurnsey.....	Nov. 19	3	193	64
SUFFOLK:					
1913					
Bridgehampton.....	H. T. Haney.....	Jan. 28-29	19	2,282	120
East Northport.....	F. B. Smith, Fort Salonga.....	Feb. 4-5	5	817	163
Riverhead.....	H. R. Talmage.....	Jan. 30-31	4	478	120
Southold.....	G. H. Smith, Peconic.....	Jan. 31- Feb. 1	5	369	74
			5	618	124

TABLE 1 — Continued

COUNTY AND PLACE OF MEETING	LOCAL CORRESPONDENT	DATE	NO. SESSIONS	AT-TEND-ANCE	AVER-AGE PER SESSION
SULLIVAN:		1912	13	1,072	82
Jeffersonville.....	Chas. S. Hick.....	Dec. 12	3	458	153
Liberty.....	F. A. Newkirk.....	Dec. 13-14	5	460	92
Long Eddy.....	M. L. McKoon.....	Dec. 11	2	74	37
Roscoe.....	Rev. L. W. Hones.....	Dec. 16	3	80	27
TIOGA:		1913	18	1,376	76
Apalachin.....	C. F. Giles.....	Feb. 20-21	5	442	88
Candor.....	R. E. Barden.....	Mar. 12-13	5	313	63
Lockwood.....	S. W. Ellison.....	Feb. 19	2	176	88
Newark Valley.....	B. M. Wager.....	Feb. 21-22	3	351	117
Richford.....	C. A. Phoenix.....	Mar. 6	3	94	31
TOMPKINS:			23	1,380	60
Danby.....	L. W. Hulslander, Wilseyville.....	Mar. 11	3	140	47
Dryden.....	Mrs. Chas. Hoehn, R. D. 19.....	Mar. 7-8	5	254	51
Enfield Center.....	F. D. Rumsey, R. D. 28, Newfield.....	Mar. 7	3	180	60
Newfield.....	W. E. Hine.....	Mar. 7-8	3	212	71
Speedsville.....	P. C. Meddaugh, R. D. 2, Candor.....	Mar. 10	3	165	55
Waterburg.....	F. N. Smith, R. D. 32, Trumansburg.....	Mar. 6	3	204	68
West Groton.....	W. H. Bulkley, Groton.....	Feb. 24	3	234	78
ULSTER:			18	1,204	67
Lake Katrine.....	C. E. Davis, R. D. 4, Sauger-ties.....	Feb. 28-Mar. 1	3	173	58
Plattekill.....	C. M. Dayton, R. D., Newburgh.....	Feb. 26	3	219	73
Stone Ridge.....	C. C. Hardenburg.....	Feb. 28	3	141	47
Uster Park.....	Geo. E. House.....	Jan. 2	3	175	58
Walkill.....	C. O. Smith, R. D. 1.....	Feb. 27	3	185	62
Woodstock.....	C. N. Risley.....	1912 Dec. 12	3	311	104
WASHINGTON:			33	2,442	74
Argyle.....	G. S. Carswell, R. D. 2.....	Dec. 19	3	196	65
Cambridge.....	H. V. Bump.....	Dec. 20-21	3	236	79
Clemons.....	B. P. Ripley, R. D. 1.....	Dec. 9	3	184	61
Easton.....	Jacob Pratt, R. D. 1, Green-wich.....	Dec. 16	3	302	101
Granville.....	Albert Jenkins.....	Dec. 12	3	77	26
Greenwich.....	O. W. Tefft.....	Dec. 17	3	176	59
Hartford.....	J. H. Beadle.....	Dec. 18	3	255	85
North Granville.....	G. S. Chapin, R. D. 2, Smiths Basin.....	Dec. 11	3	243	81
Putnam.....	G. W. Meiklejohn, Putnam Station.....	Dec. 5	3	234	78
West Hebron.....	W. E. Getty, R. D. 2, Granville.....	Dec. 20	3	428	143
Whitehall.....	O. D. McFarran, R. D. 1.....	Dec. 10	3	111	37
WAYNE:		1913	33	3,123	95
Clyde.....	J. C. Syron.....	Mar. 13	3	170	57
Huron.....	D. P. Waldron, R. D. 2, Wolcott.....	Feb. 21	3	166	55
Lincoln.....	J. C. Hulbert.....	Feb. 24	3	322	107
Macedon Center.....	J. C. Wilkinson, Walworth.....	Feb. 27	3	198	66
Marion.....	C. H. Lookup.....	Feb. 26	3	314	105
Ontario.....	John Fenster.....	Feb. 18	3	378	126
Savannah.....	Gipson Mead.....	Feb. 5	3	258	86
Sodus.....	Wm. L. Slocum.....	Feb. 20	3	318	106
Walworth.....	C. C. Lawrence.....	Feb. 25	3	216	72
Williamson.....	S. D. Millhan.....	Feb. 19	3	373	124
Wolcott.....	F. W. Kneeland, Rev.....	Feb. 21-22	3	410	137
WESTCHESTER:			5	568	114
Lincolndale.....	Rev. Brother Barnabas.....	Feb. 1	2	428	214
Peekskill, Cortland Grange.....	Miss Emma Tice.....	Feb. 5	3	140	47

TABLE 1—*Continued*

COUNTY AND PLACE OF MEETING	LOCAL CORRESPONDENT	DATE	NO. SESSIONS	ATTENDANCE	AVERAGE PER SESSION
WYOMING:					
		1913	24	2,814	117
Arcade.....	Geo. E. Hogue.....	Jan. 14	3	324	108
Attica.....	C. Broadbrooks.....	Jan. 15	3	315	105
Bliss.....	E. J. Foote.....	Jan. 23	3	345	115
Castile.....	S. L. Strivings.....	Jan. 20	3	379	126
Gainesville.....	M. W. Broughton, Silver Springs.....	Jan. 22	3	310	103
Perry Center.....	B. A. Nevins, Perry.....	Jan. 21	3	485	162
Warsaw.....	E. B. Everingham.....	Jan. 18	3	228	76
Wyoming.....	F. S. Hayden.....	Jan. 24	3	428	143
YATES:					
			21	1,692	81
Bellona.....	Rev. T. M. Morrison.....	Mar. 11	3	340	113
Branchport.....	W. T. Vail.....	Mar. 10	3	180	60
Dresden.....	E. C. Nutt.....	Mar. 7	3	110	37
Lakemont.....	Henry J. Roof, R. D., Dundee.....	Mar. 6	3	180	60
Middlesex.....	W. H. Pike.....	Feb. 5	3	453	151
Penn Yan.....	H. S. Fullager.....	Mar. 7-8	3	182	61
Rushville.....	F. B. Loomis.....	Feb. 4	3	247	82
TOTAL.....			1,195	102,004	85

B. ROUND-UP INSTITUTES

COUNTY AND PLACE OF MEETING	LOCAL CORRESPONDENT	DATE	NO. SESSIONS	ATTENDANCE	AVERAGE PER SESSION
ALLEGANY:					
Alfred.....	Prof. W. J. Wright, Alfred.....	Mar. 3-4-5-6	11	3,809	346
	A. O. Cornell, Canisteo, R. 2.....				
DELAWARE:					
Sidney.....	J. J. Waters, Sidney.....	Dec. 17-18-19	8	533	67
	J. H. Barron, Nunda.....				
	Owen Bliven, Oxford.....				
LIVINGSTON:					
Dansville.....	J. M. Foster, Dansville.....	Mar. 5-6-7	8	1,020	128
	S. L. Strivings, Castile.....				
	Chris. Miller, Cohocton.....				
ORLEANS:					
Albion.....	John Bidelman, Albion.....	Feb. 25-26-27	3	2,755	344
	E. J. McClew, Newfane.....				
	Stanley Todd, Pittsford.....				
SARATOGA:					
Saratoga Springs.....	A. C. Lottridge, Schuylerville.....	Mar. 18-19-20	8	950	119
	Geo. Randles, West Hebron.....				
	W. J. Haviland, Glens Falls.....				
	John A. Ennis, Pattersonville.....				
	Henry J. Best, West Sand Lake.....				
TOTAL.....			43	9,067	211

TABLE 1 — *Continued*

C. SUMMER INSTITUTES

COUNTY AND PLACE OF MEETING	LOCAL CORRESPONDENT	DATE	NO. SESSIONS	AT-TEND-ANCE	AVER-AGE PER SESSION
BROOME:		1912	2	203	102
Binghamton.....	Edward S. Graney.....	Aug. 6	2	203	102
CATTARAUGUS:			4	384	96
Farmersville.....	Ralph S. Hall.....	Aug. 21	2	199	100
Napoli.....	C. E. Van Aken, Little Valley R. D.....	Aug. 20	2	185	93
CAYUGA:			3	148	49
Venice Center.....	W. H. Crandall, Moravia.....	June 28	3	148	49
CHAUTAUQUA:			6	325	54
Arkwright Center.....	D. M. Cole, R. D. 14, Fredoni.....	Aug. 24	2	83	42
Charlotte Center.....	Mrs. Mary M. Hooker, Sinclairville.....	Aug. 23	2	111	56
Ellington.....	L. G. Brainard.....	Aug. 22	2	131	66
DELAWARE:			8	224	28
Cannonsville.....	C. E. Hoag.....	Oct. 3	2	30	15
Colechester Station.....	W. L. Terry, Walton.....	Oct. 2	2	70	35
Meridale.....	F. E. Davis, Delhi.....	Oct. 1	2	72	36
Shavertown.....	H. L. More.....	Oct. 4	2	52	26
ERIE:			3	276	92
Iroquois.....	Mrs. Emily P. Lincoln.....	June 25	3	276	92
GREENE:		1913	3	750	250
West Coxsackie.....	Rev. Wm. A. Dumont.....	June 3	3	750	250
LIVINGSTON:		1912	6	420	70
Scottsburg.....	W. H. Sterner.....	June 26	3	241	80
Springwater.....	Miss Jessie E. Salter.....	June 20	3	179	60
MONROE:			2	150	75
Industry.....	Jas. D. Edwards.....	Aug. 8	2	150	75
ONEIDA:		1913	4	239	120
Paris Hill.....	J. D. Parry, R. D., Cassville.....	June 12	2	182	91
Utica.....	C. A. Mosher.....	Aug. 7	2	57	29
OTSEGO:		1913	4	285	71
Middlefield.....	Rev. H. J. Reichard.....	June 11	2	146	73
Roseboom.....	Rev. H. J. Reichard, Middlefield.....	June 10	2	139	70
SARATOGA:		1912	6	337	56
Corinth.....	A. M. Hollister.....	Oct. 17	3	180	60
Wilton.....	J. H. Westfall, R. D. 2, Saratoga Springs.....	Oct. 14	3	157	52
WARREN:			4	235	59
Hague.....	S. Henry Miller.....	Oct. 15	2	95	48
North Creek.....	F. C. Hooper, No. River.....	Oct. 16	2	140	70
TOTAL.....			55	4,013	73

TABLE 1 — *Continued*

D. *SPECIAL MEETINGS IN SCHOHARIE COUNTY

PLACE OF MEETINGS	DATE	NO. SES- SIONS	AT- TEND- ANCE	AVER- AGE PER SESSION
Carlisle.....	Dec. 14	1	75	75
Carlisle.....	Jan. 8	1	50	50
Carlisle.....	Jan. 13	2	69	35
Carlisle.....	Jan. 23	1	33	33
Carlisle.....	Feb. 17	1	32	32
Esperance.....	Dec. 16	1	38	38
Esperance.....	Jan. 8	1	52	52
Esperance.....	Jan. 14	2	60	30
Esperance.....	Jan. 23	1	55	55
Esperance.....	Feb. 18	1	33	33
Gallupville.....	Dec. 13	1	33	33
Gallupville.....	Jan. 9	1	35	35
Gallupville.....	Jan. 15	2	70	35
Gallupville.....	Jan. 24	1	35	35
Gallupville.....	Feb. 18	1	37	37
Jefferson.....	Dec. 19	1	37	37
Jefferson.....	Jan. 10	1	40	40
Jefferson.....	Jan. 17	2	153	77
Jefferson.....	Jan. 25	1	57	57
Jefferson.....	Feb. 19	1	54	54
Summit.....	Dec. 20	1	54	54
Summit.....	Jan. 10	1	44	44
Summit.....	Jan. 18	2	104	52
Summit.....	Jan. 25	1	66	66
Summit.....	Feb. 20	1	58	58
West Fulton.....	Dec. 18	1	35	35
West Fulton.....	Jan. 9	1	27	27
West Fulton.....	Jan. 16	2	104	52
West Fulton.....	Jan. 24	1	38	38
West Fulton.....	Feb. 19	1	21	21
TOTAL.....	.....	36	1,599	44

* Series of single lectures given in Schoharie County in lieu of regular institutes.

E. STATE WIDE CO-OPERATIVE MEETINGS

New York State Agricultural Society.	State College of Agriculture, Ithaca:
New York State Breeders' Association.	Farmers' Week.
New York State Dairymen's Association.	State School of Agriculture, Canton:
New York State Fruit Growers' Association.	Farmers' Week.
Western New York Horticultural Society.	State School of Agriculture, Morrisville:
	Farmers' Week.

TABLE 1 — *Continued*

F. MISCELLANEOUS MEETINGS TO WHICH SPEAKERS WERE SENT

COUNTY	PLACE	DATE	NO. SES- SIONS	AT- TEND- ANCE	AVER- AGE PER SESSION
Albany.....	Guilderland.....	Oct. 30, 1912	4	366	92
	Guilderland.....	Feb. 7, 1913	1	117	117
	Guilderland.....	Feb. 19, 1913	1	52	52
	Guilderland.....	Feb. 19, 1913	1	145	145
	Albany.....	Mar. 18, 1913	1	52	52
Allegany.....	Wellsville.....	Feb. 15, 1913	3	360	120
	Wellsville.....	Mar. 15, 1913	2	210	105
	Wellsville.....	Mar. 15, 1913	1	150	150
Broome.....	Binghamton.....	Feb. 20-21, '13	2	800	400
			2	800	400
Cattaraugus.....	Lawtons.....	Sept. 11, 1912	1	95	95
			1	95	95
Chautauqua.....	Mayville.....	Dec. 5, 1912	1	600	600
			1	600	600
Chenango.....	So. New Berlin.....	Dec. 20, 1912	4	178	45
	So. New Berlin.....	Jan. 7, 1913	1	60	60
	So. New Berlin.....	Jan. 7, 1913	2	55	28
	So. New Berlin.....	Feb. 8, 1913	1	63	63
Dutchess.....	Lake Hammersley.....	June 5, 1913	5	930	186
	Millbrook.....	Dec. 18, 1912	1	100	100
	Millbrook.....	Dec. 18, 1912	1	80	80
	Millbrook.....	Sept. 4, 1912	2	550	275
	Poughkeepsie.....	Oct. 19, 1912	1	200	200
Erie.....	Chafee.....	Feb. 26, 1913	1	30	30
			1	30	30
Essex.....	Keene Valley.....	Sept. 13, 1912	2	68	34
	Willsboro.....	Mar. 14, 1913	1	25	25
	Willsboro.....	Mar. 14, 1913	1	43	43
Franklin.....	Moir.....	Jan. 30, 1913	1	50	50
			1	50	50
Madison.....	Fenner's Corners.....	April 23, 1913	1	35	35
			1	35	35
Montgomery.....	Fonda.....	Feb. 19, 1913	1	150	150
			1	150	150
Nassau.....	Mineola.....	Mar. 10, 1913	1	65	65
			1	65	65
New York.....	New York City.....	Feb. 14, 1913	2	317	159
	New York City.....	Feb. 14, 1913	1	117	117
	New York City.....	Mar. 7, 1913	1	200	200
Niagara.....	Johnson's Creek.....	Mar. 1, 1913	2	275	138
			2	275	138
Oneida.....	Marcy.....	Feb. 7, 1913	4	381	95
	Utica.....	Feb. 21, 1913	2	256	128
	Utica.....	Feb. 21, 1913	2	125	63
Onondaga.....	Fayetteville.....	Jan. 31, 1913	3	164	55
	Fayetteville.....	Feb. 28, 1913	1	24	24
	Fayetteville.....	Feb. 28, 1913	1	20	20
	Jordan.....	Feb. 10, 1913	1	120	120
Ontario.....	Bristol Center.....	Mar. 22, 1913	1	60	60
			1	60	60
Orange.....	Salisbury Mills.....	June 10, 1913	1	206	206
			1	206	206
Orleans.....	Albion.....	Mar. 22, 1913	2	190	95
	Medina.....	Mar. 8, 1913	1	90	90
	Medina.....	Mar. 8, 1913	1	100	100

TABLE 1 — *Continued*

COUNTY	PLACE	DATE	NO. SES- SIONS	AT- TEND- ANCE	AVER- AGE PER SESSION
Putnam.....	Lake Mahopae.....	Mar. 25, 1913	1 1	60 60	60 60
Queens.....	Jamaica.....	Mar. 10-12, '13	4 3	677 327	169 109
	Far Rockaway.....	Mar. 12, 1913	1	350	350
Rensselaer.....	East Greenbush.....	April 15, 1913	1 1	50 50	50 50
Rockland.....	New City.....	Nov. 20, 1912	3 1	99 21	33 21
	Spring Valley.....	Nov. 18, 1912	1	35	35
	Tallmans.....	Nov. 19, 1912	1	43	43
Saratoga.....	Ballston.....	Feb. 7, 1913	2 1	125 75	63 75
	Quaker Springs.....	Feb. 19, 1913	1	50	50
Schenectady.....	Schenectady.....	Oct. 24, 1912	5 1	445 75	89 75
	Schenectady.....	Dec. 12, 1912	1	50	50
	Schenectady.....	Jan. 23, 1913	1	75	75
	Schenectady.....	Mar. 19, 1913	1	200	200
	Schenectady.....	April 16, 1913	1	45	45
Suffolk.....	Amaganssett.....	Mar. 28, 1913	2 1	171 160	86 160
	Huntington.....	Mar. 27, 1913	1	11	11
Sullivan.....	Centerville Station.....	Feb. 5, 1913	5 1	411 38	82 38
	Glen Spey.....	Nov. 18, 1912	1	100	100
	Hurleyville.....	Feb. 4, 1913	2	187	94
	Parksville.....	Feb. 3, 1913	1	86	86
Tioga.....	Gibsons Corners.....	Jan. 31, 1913	6 1	146 26	24 26
	Gibsons Corners.....	Feb. 7, 1913	1	27	27
	Gibsons Corners.....	Feb. 18, 1913	1	23	23
	Waits.....	Jan. 31, 1913	1	18	18
	Waits.....	Feb. 7, 1913	1	17	17
	Waits.....	Feb. 18, 1913	1	35	35
Ulster.....	Greenfield.....	Feb. 6, 1913	4 1	671 48	168 48
	Marlboro.....	Jan. 3-4, 1913	2	398	199
	Marlboro.....	Jan. 31, 1913	1	225	225
Warren.....	Glens Falls.....	April 11, 1913	1 1	200 200	200 200
Wayne.....	Lyons.....	April 6, 1913	5 1	326 140	65 140
	South Butler.....	Dec. 9, 1912	3	131	44
	Wolcott.....	April 15, 1913	1	55	55
Westchester.....	Bedford Hills.....	May 28, 1913	3 1	450 50	150 50
	Lincolndale.....	Feb. 28, 1913	1	200	200
	Lincolndale.....	Mar. 26, 1913	1	200	200
Yates.....	Barton Corners.....	Sept. 7, 1912	2 2	225 225	113 113
TOTAL.....			86	9,376	109

TABLE 1 — *Concluded*

G. INSTITUTE WORK IN PUBLIC SCHOOLS

COUNTY AND PLACE OF MEETING	NO. PERIODS	AT-TEND-ANCE	AVER-AGE PER PERIOD	COUNTY AND PLACE OF MEETING	NO. PERIODS	AT-TEND-ANCE	AVER-AGE PER PERIOD
ALBANY:				Orange:	1	175	175
Berne.....	2	90	23	Monroe.....	1	175	175
South Westerlo....	2	50	25				
		40	20	ORLEANS:	4	830	208
ALLEGANY:	2	326	163	Kendall.....	1	96	96
Friendship.....	1	170	170	Lyndonville.....	2	700	350
Andover.....	1	156	156	Morton.....	1	34	34
CAYUGA:	4	68	17	OSWEGO:	3	445	148
Ira.....	1	19	19	Hannibal.....	1	100	100
Moravia.....	1	13	13	Parish.....	1	95	95
Poplar Ridge.....	1	13	13	Pulaski.....	1	250	250
Victory.....	1	23	23				
CHAUTAUQUA:	1	88	88	St. LAWRENCE:	3	410	137
Cherry Creek.....	1	88	88	Fine.....	1	40	40
COLUMBIA:	3	140	47	Gouverneur.....	1	350	350
Claverack.....	1	77	77	Lawrenceville.....	1	20	20
Johnstown.....	1	35	35				
West Ghent.....	1	28	28	SARATOGA:	2	42	21
				Quaker Springs....	1	20	20
CORTLAND:	1	26	26	Wayville.....	1	22	22
Harford.....	1	26	26				
DELAWARE:	4	244	61	STEUBEN:	4	853	213
Halcottsville.....	2	94	47	Addison.....	1	136	136
Roxbury.....	2	150	75	Campbell.....	1	62	62
				Hornell.....	1	620	620
ERIE:	4	784	196	Stephens Mills....	1	35	35
Boston.....	1	14	14				
East Aurora.....	1	518	518	SUFFOLK:	1	295	295
Eden Center.....	1	212	212	Riverhead.....	1	295	295
Marilla.....	1	40	40				
GENESEE:	1	38	38	RENSSELAER:	2	75	38
Bethany Center....	1	38	38	Hosick Falls.....	1	54	54
GREENE:	4	320	80	West Sand Lake....	1	21	21
Catskill.....	1	244	244				
Freehold.....	2	54	27	TIOGA:	5	634	127
Hensonville.....	1	22	22	Apalachin.....	1	62	62
MADISON:	2	212	106	Candor.....	1	260	260
Brookfield.....	1	87	87	Lockwood.....	1	21	21
New Woodstock....	1	125	125	Newark Valley....	1	245	245
MONROE:	3	538	179	Richford.....	1	46	46
Hilton.....	1	82	82				
Pittsford.....	1	76	76	TOMPKINS:	2	179	90
Webster.....	1	380	380	Dryden.....	1	153	153
NIAGARA:	5	588	118	Speedsville.....	1	26	26
Barker.....	2	200	100				
Gasport.....	1	88	88	ULSTER:	1	200	200
Newfane.....	2	300	150	Marlboro.....	1	200	200
ONEIDA:	3	80	27				
Marcy.....	2	50	25	WASHINGTON:	11	1,490	136
Westernville.....	1	30	30	Argyle.....	1	28	28
ONONDAGA:	3	349	116	Clemons.....	1	22	22
Baldwinsville....	1	140	140	Easton.....	2	33	17
Jordan.....	1	120	120	Granville.....	2	730	365
Warner.....	1	89	89	Greenwich.....	2	510	255
ONTARIO:	2	152	76	Hartford.....	1	72	72
Shortsville.....	1	72	72	North Granville...	1	22	22
Victor.....	1	80	80	West Hebron.....	1	82	82
				WYOMING:	5	627	125
				Arcade.....	2	418	209
				Attica.....	1	138	138
				Bliss.....	1	38	38
				Gainsville.....	1	33	33
				YATES:	1	60	60
				Rushville.....	1	60	60
				TOTAL.....	91	10,367	113

TABLE 2. RECAPITULATION FOR REGULAR INSTITUTES, INSTITUTE SCHOOLS, SUMMER INSTITUTES, SPECIAL MEETINGS AND MISCELLANEOUS MEETINGS, JUNE 15, 1912, TO JUNE 14, 1913, INCLUSIVE

A. SESSIONS, TOTAL ATTENDANCE AND AVERAGE PER SESSION

	NO. INSTITUTES	NO. SESSIONS	TOTAL ATTEND- ANCE	AVERAGE PER SESSION
Regular Institutes.....	382	1,195	102,004	85
Round-Up Institutes.....	5	43	9,067	211
Summer Institutes.....	24	55	4,013	73
*Special Meetings.....	30	36	1,599	44
Miscellaneous Meetings.....	72	86	9,376	109
TOTAL.....	513	1,415	126,059	89

* Series of single lectures given in Schoharie County in lieu of regular institutes. (See Table No. 1D).

TABLE 3. NUMBER OF DAYS' WORK IN EACH COUNTY
(Three regular sessions constitute one day)

COUNTY	DAYS	COUNTY	DAYS
<i>Regular Institutes</i>		<i>Regular Institutes</i>	
Albany.....	5 $\frac{1}{2}$	Onondaga.....	9
Allegany.....	8	Ontario.....	7 $\frac{1}{2}$
Broome.....	6	Orange.....	10
Cattaraugus.....	8	Orleans.....	7
Cayuga.....	9 $\frac{1}{2}$	Oswego.....	11 $\frac{1}{2}$
Chautauqua.....	15 $\frac{1}{2}$	Otsego.....	10
Chemung.....	5	Putnam.....	3
Chenango.....	7	Rensselaer.....	7 $\frac{1}{2}$
Clinton.....	5	Rockland.....	1 $\frac{1}{2}$
Columbia.....	7 $\frac{1}{2}$	St. Lawrence.....	12 $\frac{1}{2}$
Cortland.....	9 $\frac{1}{2}$	Saratoga.....	6
Delaware.....	7	Schenectady.....	3
Dutchess.....	8	Schoharie.....	5 $\frac{1}{2}$
Erie.....	8	Schuyler.....	6
Essex.....	6 $\frac{1}{2}$	Seneca.....	3
Franklin.....	6	Steuben.....	17
Fulton.....	3	Suffolk.....	6 $\frac{1}{2}$
Genesee.....	8	Sullivan.....	4 $\frac{1}{2}$
Greene.....	4 $\frac{1}{2}$	Tioga.....	6
Herkimer.....	6 $\frac{1}{2}$	Tompkins.....	7 $\frac{1}{2}$
Jefferson.....	11 $\frac{1}{2}$	Ulster.....	6
Lewis.....	6	Washington.....	11
Livingston.....	6	Wayne.....	11
Madison.....	10 $\frac{1}{2}$	Westchester.....	1 $\frac{1}{2}$
Monroe.....	9	Wyoming.....	8
Montgomery.....	5	Yates.....	7
Nassau.....	1 $\frac{1}{2}$	TOTAL.....	398 $\frac{1}{2}$
Niagara.....	7		
Oneida.....	5 $\frac{1}{2}$		

TABLE 3 — *Concluded*

COUNTY	DAYS	COUNTY	DAYS
<i>Summer Institutes</i>		<i>Round-Up Institutes</i>	
Broome.....	3	Allegany.....	3 2
Cattaraugus.....	1 1/2	Delaware.....	2 1/2
Cayuga.....	1	Livingston.....	2 2
Chautauqua.....	2	Orleans.....	2 2
Delaware.....	2 1/2	Saratoga.....	2 2
Erie.....	1	TOTAL.....	14 1/2
Greene.....	1		
Livingston.....	2		
Monroe.....	3		
Oneida.....	1 1/2		
Otsego.....	1 1/2		
Saratoga.....	2		
Warren.....	1 1/2		
TOTAL.....	18 1/2		

TABLE 5. LIST OF FARMERS' INSTITUTE WORKERS, JUNE 15, 1912,
TO JUNE 14, 1913, INCLUSIVE
DIRECTOR OF FARMERS' INSTITUTES:

EDWARD VAN ALSTYNE

In Charge of Meetings:

John H. Barron, Nunda.
Fred E. Gott, Spencerport.
A. J. Nicoll, Delhi.
Dr. E. M. Santee, Cortland.
George A. Smith, Geneva.
Chas. H. Tuck, Ithaca.
Jared Van Wagenen, Jr., Lawyersville.
D. P. Witter, Berkshire.

REGULAR LECTURERS WITH DATES OF SERVICE AND SUBJECTS:

Barron, John H., Nunda..... Dec. 2-10, 17-19; Jan. 6-20, 23-31; Feb.
1-28; March 1-12

Subjects: Soil Fertility.
Crop Rotation.
Plant Breeding.
Meadows and Pastures.
Farm Management.

Barton, Chas. D., Marlton, N. J..... Feb. 17-28.

Subjects: Peach Growing.
Sprays and Spraying.
Truck Crops.
Soil Fertility.

Bonsteel, F. E., Bear Lake, Pa..... Dec. 9-19; Feb. 6-22; March 5-8.

Subjects: Soil Fertility.
Dairying.
Potato Culture.
Buckwheat.
Farm Machinery.

TABLE 5 — *Continued*

Brodhead, Dr. C. W., Montrose, Pa.	Dec. 3-21; Jan. 7-25; Feb. 11-15; March 5-13.
Subjects: Care of the Horse's Feet and Teeth. Horse Breeding.	
Cox, H. E., Geneseo	Nov. 15-16; Jan. 3-4, 22; March 7.
Subjects: Bean Culture. Drainage.	
Curtis, J. G., P.-O. Box 272, Rochester	June 20, 25-28; Dec. 6-21; Jan. 2-31; Feb. 1, 10-17, 24-28; March 1-13; June 10-12.
Subjects: Soil Fertility. Alfalfa. Swine.	
Dexter, Wm. H., Washington, D. C.	Dec. 2-21
Subjects: Dairying. Cow Testing Associations. Farm Management. Scientific Agriculture and the Rural Church.	
Dollar, E. H., Heuvelton	Jan. 20-25.
Subject: Dairying.	
Ennis, John A., Pattersonville	Nov. 21-22; Dec. 6-21; Jan. 7-9; Feb. 7-8, 27-28; March 1-13.
Subjects: Dairying. Strawberries. Farm Crops.	
Findlay, Jas. A. D. S., Salisbury Mills	Jan. 10-18; March 20.
Subjects: Alfalfa. Dairying. Drainage.	
Gelder, Jay, Glens Falls	Nov. 14-21; Jan. 21-22; Feb. 5.
Subjects: Horse Breeding. Dairying. Gardening.	
Gott, Fred E., Spencerport	June 20, 25-28; Aug. 20-24; Nov. 8; Dec. 2-21; Jan. 2-31; Feb. 1-28; March 1-13.
Subjects: Fruit Growing. Sprays and Spraying. Soil Fertility. Tile Drainage. Potatoes. Cabbage. Farm Mechanics.	
Harrington, Mrs. Ida S., Ithaca	June 25, 28; Aug. 20-24; Dec. 2-7, 11-20; 26-27; Jan. 3-22, 25; Feb. 1-8, 17-28, March 1-12, 20.
Subjects: Farm Home Topics.	
Heaton, Dr. Lucia E., Canton	Nov. 18-20; Dec. 10-21; Jan. 25; Feb. 12-28; March 1-12.
Subjects: Farm Home Topics. Health Topics.	

TABLE 5 — *Continued*

Henry, Forest, Dover, Minn.	Jan. 6-31; Feb. 1-5, 10-28; March 1-13.
Subjects: Soil Fertility. Dairying. Horse Breeding. Swine. Clover and Alfalfa. Farm Buildings	
Hotaling, William, Kinderhook.	Nov. 18-22; Dec. 2-7, 13-21; Jan. 2-31; Feb. 1, 5-28; March 3-13.
Subjects: Fruit Growing. Sprays and Spraying. Fruit and Vegetable Gardening. Poultry. Improving Home Grounds.	
Johnson, Mrs. Jane S., New York City.	Dec. 9-21; Jan. 29-31; Feb. 4-5; 17-27; March 7-13.
Subjects: Farm Home Topics.	
Jones, Mrs. Della A., Worcester.	Nov. 29-30; Dec. 3-20; Jan. 2-27; Feb. 11-15, 24-28; March 1-13.
Subjects: Farm Home Topics.	
Lewis, Marion, Cameron Mills.	Dec. 2-3, 18-21; Jan. 4; Feb. 25; March 3-7.
Subject: Poultry.	
McPherson, Roy P., LeRoy.	Nov. 13; Jan. 14-31; Feb. 1-28; March 1.
Subjects: Fruit Growing. Sprays and Spraying. Soil Fertility.	
Markham, W. L., Falconer.	Nov. 7-8; Dec. 2-7.
Subjects: Dairying. Agricultural Education.	
Monroe, Mrs. Geo. E., Dryden.	Dec. 18, 27; Jan. 17-18; Feb. 20-21, 26-28; March 1, 6-7, 13; June 12.
Subjects: Farm Home Topics. Poultry.	
Montgomery, Miss Etta E., Silver Creek.	Nov. 12, 14-15, 18-19; Dec. 2-10, 18; Jan. 3-24, 28-31; Feb. 3-8; March 6-13.
Subjects: Farm Home Topics.	
Nicoll, A. J., Delhi.	Oct. 1-4; Nov. 14-23; Dec. 2-21; Jan. 2-31; Feb. 1-28; March 1-13.
Subjects: Dairying. Alfalfa. Farm Experiments. Farm Accounts.	
Ross, Orrin F., Lowville.	Dec. 2-7; Feb. 25-26.
Subjects: Dairying. Concrete Construction. Alfalfa.	

TABLE 5—*Continued*

Roudebush, Lowell, New Richmond, Ohio..	Nov. 29-30; Dec. 2-20, 26-28; Jan. 2-31; Feb. 1-28; March 1-13.
Subjects:	Soil Fertility. Farm Crops. Horses. Swine. Sheep. Feeding. Noxious Weeds. Tree and Bush Fruits. Land of the Midnight Sun (Evening Lecture).
Santee, Dr. E. M., Cortland.....	Nov. 14-23, 29-30; Dec. 2-20, 27; Jan. 2-20, 23-31; Feb. 1-28; March 1-6.
Subjects:	Poultry. Cement Construction. Sanitation.
Sirrine, F. A., Riverhead.....	Nov. 12-23; Jan. 28, 30-31; Feb. 1, 4-5.
Subjects:	Potato Growing. Spraying. Asparagus and Cauliflower. Peaches. Corn Selection and Development. Selection and Hybridization of Seeds. Tillage.
van Alstyne, Edward.	
Subjects:	Horticulture. Soil Fertility. Dairying. Sheep. Swine. General Agricultural Topics.
Van Wagenen, Jr., Jared, Lawyersville....	Oct. 14-17; Nov. 8; Dec. 13-20, 26-28; Jan. 11-22, 28-31; Feb. 1-5, 11-15, 21-27; March 3-7, 13, 18, 20; June 3, 10-12.
Subjects:	Dairying. Soil Fertility. Corn Growing. Alfalfa. Meadows and Pastures. Fruit and Spraying. Social Problems of the Farm Community History and Legends of New York State The Good Farmer.
	} Evening lectures.
Witter, D. P., Berkshire.....	June 25-26; Aug. 20-24; Nov. 7-8, 12-23; Dec. 2-21; Jan. 2-31; Feb. 1-28; March 1-13.
Subjects:	Dairying. Soil Fertility. Field Crops. Meadows and Pastures. Crop Rotation. Sheep. Poultry. Water Supply and Sewage Disposal.

TABLE 5 — *Continued*

Zinn, W. D., Philippi, W. Va. Jan. 20-31; Feb. 1-28; March 1-12.

Subjects: Soil Fertility.
Meadows and Pastures.
Silos and Silage.
Live Stock vs. Grain Farming.

LECTURERS FROM STATE DEPARTMENT OF AGRICULTURE

Dr. J. F. DeVine, Consulting Veterinarian, Goshen, N. Y.
Dr. M. Hamilton, Veterinarian, Delhi, N. Y.
Hon. Calvin J. Huson, Commissioner of Agriculture, Albany, N. Y.
Dr. C. J. Mulvey, Veterinarian, Mooers, N. Y.
Chas. Stewart, Jamestown, N. Y.
B. D. Van Buren, Assistant Chief Horticulturist, Albany, N. Y.
Dr. E. L. Volgenau, Veterinarian, 540 Michigan street, Buffalo, N. Y.
Hon. Harry B. Winters, First Assistant Commissioner of Agriculture, Albany, N. Y.

LECTURERS FROM STATE COLLEGE OF AGRICULTURE

Dean L. H. Bailey, Director of the College of Agriculture, Ithaca, N. Y.
M. F. Barrus, Assistant Professor of Plant Pathology, Ithaca, N. Y.
E. W. Benjamin, Instructor in Poultry Husbandry, Ithaca, N. Y.
John Bentley, Jr., Assistant Professor of Forestry, Ithaca, N. Y.
E. O. Fippin, Professor of Soil Technology, Ithaca, N. Y.
W. G. Krum, Superintendent of Poultry Plant, Ithaca, N. Y.
Donald Reddick, Professor of Plant Pathology, Ithaca, N. Y.
J. E. Rice, Professor of Poultry Husbandry, Ithaca, N. Y.
C. A. Rogers, Assistant Professor of Poultry Husbandry, Ithaca, N. Y.
R. P. Trask, Assistant in Poultry Husbandry, Ithaca, N. Y.
Chas. H. Tuck, Professor of Extension Teaching, Ithaca, N. Y.

LECTURERS FROM NEW YORK AGRICULTURAL EXPERIMENT STATION

Jos. F. Barker, in charge of Soil Investigations, Geneva, N. Y.
F. E. Gladwin, Special Agent, Fredonia, N. Y.
F. H. Hall, Editor and Librarian, Geneva, N. Y.
F. Z. Hartzell, Associate Entomologist, Fredonia, N. Y.
U. P. Hedrick, Horticulturist, Geneva, N. Y.
P. J. Parrott, Entomologist, Geneva, N. Y.
Geo. A. Smith, Dairy Expert, Geneva, N. Y.
Fred C. Stewart, Botanist, Geneva, N. Y.
O. M. Taylor, Foreman in Horticulture, Geneva, N. Y.

LECTURERS FROM STATE COLLEGE OF FORESTRY, SYRACUSE

John W. Stephen, Assistant Professor of Farm Forestry, Syracuse, N. Y.

LECTURERS FROM STATE SCHOOLS OF AGRICULTURE

Dean H. E. Cook, State School of Agriculture, Canton, N. Y.
Miss Angeline Wood, State School of Agriculture, Alfred, N. Y.

LECTURERS FROM UNITED STATES DEPARTMENT OF AGRICULTURE

Geo. W. Harris, Baldwinsville, N. Y.

LECTURERS FROM STATE EDUCATION DEPARTMENT

Dr. E. P. Felt, State Entomologist, Albany, N. Y.
S. L. Hawkins, Albany, N. Y.
E. F. McDonald, Massena, N. Y.
A. J. Merrell, Rochester, N. Y.
C. L. Mosher, Utica, N. Y.

TABLE 5—*Concluded*

LECTURERS FROM STATE CONSERVATION COMMISSION

F. A. Gaylord, State Forester, Albany, N. Y.

R. Rosenbluth, in charge of Forest Investigations, Albany, N. Y.

FARM BUREAU AGENTS

E. H. Anderson, Lockport, N. Y.

G. Wendell Bush, Utica, N. Y.

F. E. Robertson, Watertown, N. Y.

H. B. Rogers, Chautauqua, N. Y.

LECTURERS FROM STATE CHARITIES AID ASSOCIATION

Geo. J. Nelbach, New York City.

Rev. H. G. Ogden, Jamestown, N. Y.

H. H. Seaver, Malone, N. Y.

Jay M. Strong, New York City.

Dixon Van Blarcom, New York City.

LECTURERS FROM NEW JERSEY AGRICULTURAL EXPERIMENT STATION

Alva Agee, Chief of Agricultural Extension Work, New Brunswick, N. J.

A. L. Clark, Assistant Poultry Husbandman, New Brunswick, N. J.

H. R. Lewis, Poultry Husbandman, New Brunswick, N. J.

Dr. J. G. Lipman, Director, New Brunswick, N. J.

SPECIAL LECTURERS

Mrs. Mary Brainard, Ellington, N. Y.

Mrs. C. W. Brodhead, Montrose, Pa.

H. C. Bump, Ferndale, N. Y.

F. L. Burnham, Little York, N. Y.

Mrs. Jean K. Foulke, Lodi, N. Y.

H. B. Harpending, Dundee, N. Y.

Geo. H. Hyde, Cortland, N. Y.

W. H. Ingling, Freehold, N. J.

John Jeannin, jr., West Sand Lake, N. Y.

Martin King, jr., Dansville, N. Y.

Rev. T. Maxwell Morrison, Bellona, N. Y.

Mrs. Rose Morgan, New York City.

J. Grant Morse, Hamilton, N. Y.

M. S. Nye, Preble, N. Y.

J. W. Pincus, New York City.

Irving F. Rice, Cortland, N. Y.

R. J. Shepard, Batavia, N. Y.

Rev. C. H. Tator, Northport, L. I.

Andrew Tuck, Ogdensburg, N. Y.

C. R. White, Ionia, N. Y.

NORMAL INSTITUTE

Following the excellent plan established in 1898 of gathering the workers together at the Experiment Station or State College of Agriculture for instruction and conference, the fourteenth such meeting was held November 25 to 27, 1912, at the New York Agricultural Experiment Station, Geneva.

The following program will show the subjects discussed:

PROGRAM

MONDAY

- 9:45 A. M. INTRODUCTORY REMARKS DIRECTOR VAN ALSTYNE
10:00 A. M. SOIL SURVEYS AND THEIR PRACTICAL VALUE
MR. BARKER
11:00 A. M. DRAINAGE AND DEEP TILLAGE PROF. FIPPIN
-

- 2:00 P. M. SOIL ACIDITY—THE POSSIBLE DANGERS OF INJURY
TO SOIL FROM FERTILIZERS PROF. CAVANAUGH
3:00 P. M. THE RELATIVE VALUE OF PLANT FOOD IN VARIOUS
FORMS DR. VAN SLYKE
4:00 P. M. THE USE OF LIME AND ITS VALUE IN DIFFERENT
FORMS DR. VAN SLYKE AND PROF. CAVANAUGH
-

- 2:30 P. M. CONFERENCE OF WOMEN WORKERS
IN CHARGE OF PROF. VAN RENSSELAER
-

- 8:00 P. M. WOMEN'S WORK IN THE INSTITUTE MRS. HARRINGTON
9:00 P. M. SOME FINDINGS REGARDING FARM MANAGEMENT
PROF. WARREN
-

TUESDAY

- 9:00 A. M. DISCUSSION OF RECENT DEVELOPMENTS IN THE
FIELD OF ANIMAL NUTRITION LED BY DR. JORDAN
10:00 A. M. DISCUSSION OF DAIRY RECORDS AND COW TESTING
ASSOCIATIONS LED BY PROF. WING
11:00 A. M. NEEDED CHANGES IN OUR LAWS REGARDING BOVINE
TUBERCULOSIS COMMISSIONER HUSON

2:00 P. M.	DISCUSSION OF IMPORTANT HORTICULTURAL TEACHINGS	LED BY PROF. WILSON AND PROF. HEDRICK
3:00 P. M.	DISCUSSION OF IMPORTANT ENTOMOLOGICAL TEACHINGS	LED BY PROF. HERRICK AND PROF. PARROTT
4:00 P. M.	DISCUSSION OF IMPORTANT TEACHINGS AS TO PLANT DISEASES	LED BY PROF. STEWART AND PROF. REDDICK

8:00 P. M.	THE DEPARTMENT OF AGRICULTURE AND THE STATE	COMMISSIONER HUSON
8:30 P. M.	THE EXPERIMENT STATION AND THE STATE	DR. JORDAN
9:00 P. M.	THE COLLEGE OF AGRICULTURE AND THE STATE	DR. BAILEY

WEDNESDAY

8:30 A. M.	THE "FOLLOW UP" WORK	MR. WITTER
9:30 A. M.	IMPORTANT TEACHINGS REGARDING POULTRY HUSBANDRY	PROF. RICE
11:00 A. M.	THE WINTER'S WORK	DIRECTOR VAN ALSTYNE

There was no attempt at formal addresses aside from those given in the evening. The men selected as leaders emphasized points of particular importance. These were discussed by those present and at the end of the period the matter brought out was summed up and the synopses of the addresses that followed were decided upon to be the teachings of the institutes the coming winter. The underlying thought was not only that the teachings should be the result of the most recent knowledge of agricultural science and practice, but that they should be uniform in all the meetings and with all the workers. Each man was furnished with the synopses as his guide; and as a result, the teachings of the institutes have been founded on the underlying principles and have been more uniform than ever before.

At this meeting there were about thirty present, comprising all the men who were to assist with the work, with the exception of one or two who were unavoidably detained. The expenses of these workers were paid but no compensation.

The following is part of the instructions given to the workers, and since it concerns the public in general it is republished here that they may understand the attitude of the department toward the work as a whole.

INSTRUCTIONS TO WORKERS

All the workers are expected as a part of their work to render any service to the men of the Department of Education at schools or teachers' conferences, so long as it does not interfere with their duties at the institutes. Cooperation is particularly desirable wherever men are found in charge of county bureaus, and with district school superintendents.

Wherever the local correspondent does not measure up to his duties, endeavor to select another better qualified. Try and have such men act as agricultural representatives throughout the entire year, keeping in close touch with this bureau.

In every way push the subject of farm management and of cooperation.

Do not change the programs. The subjects are those particularly asked for by the community. Sometimes the wording of such is designed to meet this particular request and the speaker can cover it with his general knowledge of the subject.

If at any time any of the workers find that charts or other material would be helpful, this bureau would be glad to assist them in providing the same. Any literature at the command of this office that would help the work, will be supplied to any worker on application.

The leaders should see to it that the addresses do not exceed forty-five minutes, with the possible exception of an evening lecture on a broad theme. In many cases a half hour is preferable, thus giving more time to the question box and discussions.

Conductors will be furnished with "follow up" books, wherein they will write the names of men whose farms it seems wise to visit that they may be given help and instruction relative to farm practices. The workers in taking such names will report them to the one in charge of the meeting who will enter them on the book and forward carbon of all such to the director. Care should be exercised in selecting only such men as seem either most in need or, in the matter of experiments, capable of cooperating. Later the director will designate those who will do this work. It is advisable that where men receiving this help are financially able they pay the traveling expenses and, where it does not interfere

with the convenience and comfort of the men doing the work, the livery and hotel charges. Wealthy city men with estates in the country should pay the entire charges.

SOIL SURVEYS

The main value of the soil survey as conducted at present is to secure a classification of soils by the soil investigator for future study. The survey itself will not be of immediate value to the individual land owner. The farmer may get some benefit from the soil maps, depending upon his knowledge of the soil. The man who makes the survey may be able to give a farmer some valuable information because of his observations of farm practices on farms having similar soil conditions.

The volusia soils form a group or series occurring in the glacial regions which are much alike in practically all particulars except their texture. The notable feature is that they are derived from sandstone and shales. They are most frequent on rolling and hilly land and they are usually deficient in lime. About one-third of the soils of the state are known as volusia, but they occur in the southern tier of counties and half of the second tier until the mountainous regions of the East are reached. They vary in their character. The volusia silt is about as poor as any land.

The soil survey does not determine available potash and phosphoric acid. Farm practices when successful are a better gauge of proper methods than analyses. Available nitrogen, phosphoric acid and potash can not, to any extent, be determined by soil analyses.

DRAINAGE AND DEEP TILLAGE

Fifty per cent. of the tilled land in New York State is in need of drainage and it is being demonstrated that drainage can be done with much profit. The slope of the land does not necessarily eliminate the need of drainage. Those who need most teaching regarding drainage are those living on hill lands.

The extent of drains must be gauged by the type of farming — the crops produced. In draining land for crops where the unit of value is \$230 per acre instead of \$30, use 20 or 30-foot distances and not 40 or 50.

A good arrangement of drains on hill lands would be to have

them run diagonal. This would tend to cut off the springs and give greater efficiency from the tile. It is not so true as it has generally been considered, that the deeper the drain the greater the efficiency. On clay or hardpan lands the tile may be so deep and the water may reach it so slowly that the plants would be dead before the water was removed. Lay as deep as possible in light soils; in heavy hardpan it may be laid eighteen inches or two feet deep.

Vitrified tile is the best as a general rule, and can be bought as cheaply or cheaper in the market than the soft tile. Three-inch tile at Ithaca costs \$16 per thousand. Do not hesitate to put hard tile within eighteen inches of the surface.

Machines are the only practical way of digging where large areas are to be drained. Cyclone is the best horse ditcher and Buckeye the best tractor.

Dynamite is good for cleaning open drains but not economical for tile draining. When used as final drainage medium it is only good where there is a porous strata beneath the topsoil.

Cement tile can not be made so good as the best vitrified tile and is more expensive, except the large sizes.

DEEP TILLAGE

Practically all of our land will respond to deep tillage providing organic matter goes with it. This is a general principle. However, on sandy soils unless special means are used to get organic matter in, we had better not practice it. All of our operations on such soil must be to compact the soil to hold water.

Experience indicates that we should go gradually — half an inch to one inch per year, and continue this just as long as we can turn it and put organic matter in the soil. Subsoiling as such does not pay. Better to do the deep plowing in the fall; this is all right in the spring if it can be done without puddling the soil. The Spaulding Deep Tilling machine is the most practical one known.

SOIL ACIDITY

A good agricultural soil always contains two classes of compounds — basic and acid. The basic compounds are acid neutralizing. Acids are formed in the soils in various ways. Every

time a crop is plowed under it produces acid. Any soil which is characterized by the absence of carbonates is in a condition to become acid. As long as we keep in the soil the materials that neutralize acidity, soil acidity is impossible. The most natural neutralizing material is calcium carbonate, but caustic forms of lime are often more economical to use in New York State.

The students of soil chemistry have come to recognize the fact that any chemical compound put on the soil may have a variety of effects. Nitrate of soda put on to supply nitrogen, will undoubtedly do that, but it has many other effects besides. It will affect the solubility of the insoluble compounds that are in the soil; it will modify the solubility of other plant materials put in, and it may affect its physical properties.

If large amounts of nitrate of soda are used for a long time, an accumulation of sodium carbonate is likely to result. This attacks the structure of the soil and the crumb formation is broken down. Potassium carbonate and sodium carbonate will also have this effect. It is possible for a soil to get into a very bad physical condition by the excessive use of nitrate of soda. This is not a difficult condition to overcome, however, as it may be counteracted by the use of acid phosphate or ammonium sulphate. It is, therefore, good practice to use ammonium sulphate when nitrate of soda is applied in large amounts. Soils have become acid through the continued use of ammonium sulphate. Land plaster will also overcome to some extent the effect of sodium carbonate, changing the sodium carbonate to calcium carbonate.

The continued use of acid phosphate has made soils acid. This can easily be overcome by the use of lime. Soils are not usually made acid as a result of the use of potash salts, due to the small applications.

The best method for making the litmus test is as follows: Take an ordinary glass tumbler and into the bottom and next to the glass place a piece of blue litmus paper. Over the litmus paper fit a piece of white blotting paper or filter paper, cut round, so as to fit in comfortably tight. On top of the white blotting paper or filter paper put the soil to be tested. Then pour on enough water to wet the soil thoroughly so that the moisture will go down through to the litmus paper. If the blue litmus paper is turned to a pinkish

color the soil shows acidity. The more quickly the paper changes and the deeper the pink color becomes, the more acid is the soil. In order to make sure that the materials used — the blotting paper and water — are not acid or alkaline, put in the bottom of the tumbler a piece of blue litmus paper and also a piece of red litmus paper. Then on this place the blotting paper as before. Pour on some water, the same as is used in moistening the soil. If either of the litmus papers is changed at all in color, then the paper or the water cannot be used; if the blue paper changes to red then the water or the paper is acid — if the red paper becomes blue, the paper or water is alkaline. Only paper and water which are neither acid nor alkaline can be used.

VARIOUS FORMS OF PLANT FOOD

There are three general sources of artificial nitrogen. Calcium nitrate or lime nitrate represents one class; ammonia represents the second; and cyanamide represents the third.

The nitrogen in fertilizers from waste materials such as leather scraps, hair, rags, etc., is, by modern methods, made available.

* Artificial nitric acid is being manufactured in increasingly large quantities from the air. The nitrogen of the air and oxygen are brought together by electric energy at a high temperature and the nitric acid is formed. It is believed that this will be an important source of commercial nitrate within five or ten years. It is combined with lime instead of sodium.

* Ammonia. A factory is now being built in Germany for the commercial production of ammonia. The method is to take the gases nitrogen and hydrogen and bring them into contact with iron which is heated to a certain temperature. The result is liquid ammonia. The materials are all very cheap. This manufacture can be carried on independent of cheap water power. One advantage of the production of ammonia is that, when ammonia can be produced abundantly and nitric acid is already available, the two can be combined to make ammonium nitrate. In this compound half of the nitrogen is in the form of ammonia and half in the form of nitric acid. It would mean 35 pounds in every 100 pounds of material instead of 10 to 15.

* NOTE.— This matter for benefit of workers but not necessary to use unless the point is brought up.

* Cyanamide is made from lime, nitrogen and carbon; it also involves the use of electric power; and is made in this country. There is a plant at Niagara Falls. The material is being used in a very large number, if not the majority, of the fertilizers now on the market. It decomposes in the soil readily and is nearly as available as ammonia.

It is wise to use nitrate of soda, sulphate of ammonia and organic nitrogen in combination where nitrogen is needed for the whole season.

It is extremely costly for the average farmer to use dried blood and fish except under conditions where other forms of organic nitrogen are not available. The nitrogen in blood and fish will cost about 25 cents per pound, whereas he can get the nitrogen in nitrate and ammonium sulphate for from 15 to 17 cents per pound.

Aside from the chemicals, tankage as a source of nitrogen is as cheap as anything that can be purchased—a good grade runs 3, 4 or 5 per cent. of nitrogen to 10, 12 or 18 per cent. of phosphoric acid. There are usually three grades and the composition depends upon the relative amount of bone and meat. Fineness and dryness are essential.

It has been found that plants can use nitrogen in forms other than nitrates, but it is universally held that the nitrogen that the plant actually takes into the roots is largely in the form of a nitrate.

PHOSPHORIC ACID

* The use of nitric acid instead of sulphuric acid in dissolving the rock should make it more valuable. When the rock is treated with nitric acid, calcium nitrate is the result. This is even more valuable than nitrate of soda, so we have a mixture which contains a maximum of plant food material.

It has been generally believed that it was wise to mix the rock phosphate with the manure. Some work in Wisconsin indicates that it does take part in the bacterial action and is rendered soluble, but it also shows that it is taken into the bacterial bodies and is converted into insoluble form again and needs to undergo decomposition before the phosphoric acid is again available.

* NOTE.—This matter for benefit of workers but not necessary to use unless the point is brought up.

Raw rock as an absorbent is as good as road dust but has no chemical effect in retaining ammonia. Acid phosphate has such chemical value.

Basic slag. On acid soils basic slag often gives excellent results; on those slightly acid it may give as good returns as acid phosphate.

Floats. One need not expect returns from floats unless there is an abundance of vegetable matter in the soil. Before using extensively, farmers are advised to experiment on their particular fields in a small way.

POTASH

Potash in feldspar is practically useless as plant food, but new processes have been proposed which promise to convert feldspar potash into a product that is available as plant food.

SULPHUR

The matter of using sulphur as a plant food is in an experimental stage. There seems little warrant for it. On Long Island its use was detrimental to plant growth.

LIME

Nature has put lime into the soil in the form of carbonate.

Ground limestone should be fine enough to pass through a screen of one hundred meshes to the inch. When ground limestone can be laid down at \$3, provided the haul is not too long, it is probably the cheapest form to use.

Slaking lump lime causes a large waste and under ordinary circumstances is not economical. Hydrated or water-slaked lime is a desirable form, but one cannot afford to pay any more for it than for the best forms of burned lime. A larger amount will need to be used in order to obtain the same amount of calcium.

The question of the cheapest form in which to buy lime can be decided with the help of the following table. Since 100 pounds of quicklime is equal in value to 130 pounds of slaked lime or 180 pounds of carbonate of lime (freight and transportation not

considered), the equivalent value of these forms to quicklime at a stated cost is as follows:

Value of quicklime	Equivalent value of	
	Slaked lime	Carbonate
\$8.00	\$6.05	\$4.50
7.00	5.30	3.95
6.00	4.55	3.40
5.00	3.80	2.80
4.00	3.05	2.25
3.00	2.30	1.70

For example: When one ton of quicklime can be bought for \$5.00, one ton of slaked lime should be bought for \$3.80; one ton of carbonate for \$2.80.

Where calcium is in excess of magnesia in the soil there is little or no danger from the use of magnesia in the carbonate form. Caustic magnesia is more likely to destroy humus too rapidly. Such limes would be better used in smaller quantities and more frequently.

ANIMAL NUTRITION

The following is the method of securing analysis of the different feeding stuffs:

The agents of the Department of Agriculture collect the samples, which are numbered and sent to the State Experiment Station bearing only the number and not the name of the manufacturer. The samples are analyzed and reported to the department by number where they are matched up with the name of the manufacturer. Thus the Commissioner does not know what the analyses are to be and the station does not know whose goods are analyzed.

The compound feeds have increased in number and some of these contain very much inferior matter, particularly the molasses feeds. Thirteen per cent. of all the feeds analyzed fell below guarantee. These were largely the compounded goods just referred to.

It has been found that samples made up of a considerable amount of screenings contain sand. Some of the compounded feeds were found to contain as high as 3½ per cent. of it.

Cottonseed meal is the cheapest source of protein. The better class of dried distillery grains is considered one of the best forms

of feed to buy. It is considered a good plan to put in wheat bran to break up the heavier feeds, when the price is not relatively higher than other feeds of similar analysis.

The protein in ripened seed products is a much better form than in the green products. Farmers should be warned against buying mixtures that are made up of oat hulls, clipped oats, etc. These substances are largely indigestible and protein purchased in such feeds is very expensive. The high-class compounds can be safely bought, it being only a question of expense.

Feeds manufactured from washed by-products that are very low in ash are not good to use, for the health of the animal or for the strength or vitality of the offspring.

The term "corn-meal" should not be applied to anything except the grain ground entire.

The name "oat feed" should not be used at all. There are, strictly speaking, no oat feeds. See Geneva Bulletin No. 351.

Dried brewers' grains, malt sprouts and feeds of this character are not the most valuable form of protein but may be fed to advantage particularly with leguminous fodder or when bran is particularly high in price.

High-class compounded feeds such as Unicorn and Blue Ribbon, are up to guarantee and are excellent combinations where men do not care to do their own mixing. A careful study of Bulletin No. 351, or any table of food constituents, will enable a man to make his own mixture with less cost and equally good results as when using the above.

COW TESTING ASSOCIATIONS

The value of cow testing must be proved to a sufficient extent, that the farmers will put it into practice. Bulletin No. 30 of the State Department of Agriculture contains figures to prove what has actually been done as a result of such associations. It is wise to emphasize the point that the dairyman can test his own herds without an association; but since in most cases this will not be done, the association should be urged.

It should be made clear to the farmer that individual records of animals for a year are of infinitely greater value than short, forced records.

Professor Wing agrees to approve advanced registry tests made by testers employed by cow testing associations when such testers are approved by him. The "follow up" work in this connection, growing out of the work of the institutes, is to be reported to the Director of Farmers' Institutes.

In all cases where considerable numbers in a cow testing association wish to do advanced registry work, it is very desirable that the association be organized in such a way that the tester can be changed from month to month and if this is done the increased cost will be nominal. This increased cost would be paid by the owners of the animals and not by the association.

The greatest impetus to improved dairying has come from the use of pure-bred animals and its importance should, therefore, be emphasized. There are 1,500,000 cows in the state, and there is no reason why at least one-quarter of these cows should not be pure bred.

Emphasis should be laid on the importance of raising dairy cows to sell. The production of the dairy cow as a cow is improving and gives promise of being most profitable if carried on according to the above lines.

THE MILKING MACHINE

Whether a milking machine would be profitable or practical depends upon the kind of a man who uses it. If a man is careless and does not notice the little things, he will not succeed with the machine, but if he will pay attention to the essential rules of operation and use care in every particular, it can be successfully employed. A man should have about fifteen cows before he could economically operate a milking machine.

In one case the owner of a milking machine arranged to have one man operate it all the time, keeping the other help in the field. This one man, with a boy to handle the milk, operated three machines and milked forty-five cows.

The time required in milking is about four minutes to a cow by machine, eight minutes by hand; including the weighing, cleaning and all things that enter into the process.

BOVINE TUBERCULOSIS

The present law provides as follows:

All infectious diseases of whatever kind must be reported by veterinarians to the department of agriculture. When cattle are tuberculin tested, no matter by whom, report of the test must be made to the department of agriculture within seven days. Affidavits must be made by the owner or custodian of the herd that no test has been made within four weeks previous, or if test has been made within that time, a statement must be made as to party making the test.

When the department is notified that tuberculosis is believed to exist, the commissioner, if he deems best, or the owner desires it, may order the test made.

In making application for the test the owner agrees to bring no animals into his herd without such animals having been first tuberculin tested.

After animals are condemned (having reacted) an appraisal is made — in the case of a few animals, ordinarily, by the veterinarian making the test; or if the owner so desires, the state department of agriculture has five or six good farmers who have qualified as appraisers located in different sections of the state, who may be called upon to make the appraisal in their locality. If in either case the appraisal is not satisfactory, each party selects one appraiser, who in case of a non-agreement, select a third, whose appraisal is final when approved by the commissioner. The maximum appraisal provided is \$125 for a pure bred; \$75 for a grade. The owner receives 50 per cent. of the appraised value if the animal has generalized tuberculosis, 80 per cent. if localized and 100 per cent. if no lesions are found.

Any person may buy tuberculin and test his herd, but all such tests must be reported.

The owner or other person may retain in his possession animals that have reacted to the tuberculin test and are considered tuberculous but appear physically sound, provided such animals are segregated from animals not affected, and provided the milk from such tuberculous animals is pasteurized.

All cattle brought into the state for dairy or breeding purposes must be tuberculin tested. Bringing in animals with contagious or infectious diseases is unlawful.

The maximum appraisal for glandered horses is \$120 and the allowance is based upon the condition shown before slaughter. Physical evidence of the disease entitles the owner to 50 per cent. of the appraised valuation.

*The law proposed at the conference of dairymen, breeders and others interested in the elimination of tuberculosis, called by the commissioner of agriculture to consider the question, would add to the existing law as follows:

1st. That a physical examination of *all* the herds of the state be made under the supervision of the state, if it can be done by competent men and funds are available.

2d. That the pasteurization of all skimmed milk and whey from butter and cheese factories and creameries be compulsory.

3d. That an indemnity of \$15 be allowed for a cow having generalized tuberculosis, whether such fact be determined by physical examination or tuberculin test; the owners to retain the hide and carcass.

The proposed law is not intended to supplant the tuberculin test in any way.

Unpasteurized milk has been a great source of infection. It is believed that if the practice of feeding such milk to calves could be stopped, tuberculosis would be eliminated in a generation.

The farmers' institute workers are advised that the desire for a change in the present law emanated from the dairymen and breeders of the state and not from the department or veterinarians. Dairymen have reached the conclusion that a seriously diseased cow is an unprofitable one and that it is for the general interest of the state that they should be eliminated. To provide for a voluntary physical examination only, would be of no value whatever, since one man might want it and another resist it, as is the case with the tuberculin test.

HORTICULTURAL TEACHINGS

TILLAGE AND SOD

There is no change of front as to tillage and sod. Tillage is the rule — sod the exception.

* No legislative action was taken.

FERTILIZERS FOR APPLES

* "The trees in this experiment would have been practically as well off had not an ounce of fertilizer been applied to them. One must conclude that, if fertilizers have no value in this orchard, they have no value in many other orchards in New York.

"From the data at hand there seems to be but one interpretation of the results of this experiment. An analysis of the soil before the experiment was begun shows that at that time there was, in the upper foot of soil, enough nitrogen per acre to last mature apple trees 183 years, of phosphoric acid, 295 years, of potash, 713 years. From this well-nigh inexhaustible storehouse, tillage, cover-crops and good care have made available all the plant food these trees needed.

"It may be necessary to fertilize some apple orchards in New York. Such cases will be found on sandy and gravelly soils, on lands subject to drought, on very shallow soils and on soils devoid of humus. Some soils may require one of the chief elements of fertility; some, though few, need the three which usually constitute a complete fertilizer.

"A fruit grower may assume that his trees do not need fertilizers if they are vigorous and making a fair amount of new wood. If the trees are not vigorous, the drainage, tillage and sanitary condition of the orchard should be looked to first and the fertilization afterward if then found necessary. Before using fertilizers the fruit-grower should obtain positive evidence by experimentation as to whether an orchard needs fertilizers, and what ones."

COVER CROPS

Orchardists need to be reminded rather than informed in regard to cover crops. A combination cover crop is best, and vetch is taking the place of clover. Twenty to thirty pounds of vetch to a bushel and a half of oats or barley per acre is a good combination.

In cases where vetch has proved unsuccessful the first year, it has been found that a very good crop can be grown the second year.

* From Geneva Experiment Station Bulletin No. 399.

INTER CROPS

Orchards are to be cropped only until they come into bearing and with none but hoed crops.

DWARF APPLES

The discrepancies between promise and performance become greater each year in the Station dwarf orchards. Dwarf apples and dwarf pears should be recommended only for the amateur. Cherries dwarfed on Mahaleb stock should not be recommended. Cherry is best on Mazard stock for commercial purposes.

PRUNING

The pruning knife is often "a sword in the hands of a child." Year in and year out more harm than good is done in pruning the orchards of this state. Caution fruit growers to prune young trees only enough to shape the head — not to head in as a rule, except with peaches — as a regular practice. Thin old trees a little every year — cherries are usually injured by pruning. Severe pruning is warranted only in sick or somnolent orchards. Dehorning has small value as an orchard practice.

LOW-HEADING

Low-heading, at least lower-heading, is the fashion and it seems to be a good one. The Greening should be headed at two and one-half or possibly three feet; the Baldwin at two feet. The pruning should be done so as to cause the branches of low-headed trees to grow upward, while those of high-headed trees may be more spreading.

TIME TO PLANT

Hardy two-year-old apples are best planted in the fall — all other fruits or trees in the spring.

AGE TO PLANT

Two-year-old trees are better than one-year-olds if good trees can be purchased, with the single exception of peaches. Never plant three-year-olds.

NEW VARIETIES

Speculation is the chief charm of new varieties and there are few new sorts that have more than speculative value. For commercial plantations, recommend only standard sorts.

FROST FIGHTING

Orchard heaters have as yet no place in New York horticulture. A thrifty, healthy, well-matured plant is the best precaution in this state against cold or frosts.

TOP-WORKING TREES

This practice can seldom be recommended.

VINEYARDS

Neglect is the chief trouble with vineyards in New York. Better tillage, spraying and cover crops are restoring vineyards.

LAYING OUT ORCHARDS

Continue to advise that orchards be laid out in squares. No advantages are shown for the fancy figures recommended.

FILLERS

As a rule, fillers are to be recommended for apple orchards — not always. The use of fillers is more advisable where the orchard is an adjunct to the farm. Fillers for apples should usually be apples.

IMPORTANCE OF VARIETIES

In 1893 Waite of Washington discovered that Bartlett pears needed cross-pollination. Since then we have discovered that some other fruits need to be interplanted. Few, however, of our standard fruits need cross-pollination and the value of an orchard or vineyard can be greatly lessened by mixed planting.

BOXING AND BARRELLING

The majority of New York apples are barrel apples, not box apples.

PEDIGREE FRUITS

A man is out-running his license who advocates pedigreed nursery stock. Our present knowledge of the subject is but a thing of shreds and patches with the great weight of evidence on the side of stock unadorned with a so-called pedigree. A tree is literally "a chip of the old block."

MARKET PREFERENCE OF VARIETIES

A canvass made by the College of Agriculture, of commission men handling apples in 34 of the principal cities of the United States, shows the first ten preferences of the trade for winter varieties, as follows:

Tompkins King	113
Baldwin	105
Jonathan	102
Northern Spy	81
Rhode Island Greening	72
Maiden Blush	68
Famense	64
Wealthy	59
Oldenburg	55
Alexander	47
McIntosh	43
Rome Beauty	43
Winesap	28
Esopus	27

In New York the greatest demand is for the Baldwin, Rhode Island Greening and Jonathan.

In Boston — Baldwin, McIntosh, Northern Spy and Gravenstein.

In Chicago — Jonathan, Baldwin, Tompkins King, Northern Spy, Rhode Island Greening and Oldenburg.

The prevailing opinion seems to be that color is the most important market factor, but flavor is gaining rapidly in favor.

It would be well to recommend that barrels containing apples be marked to indicate the use to which the variety contained therein is best adapted.

It was thought best that the recommendations as to varieties be the same as contained in list of last year. The following are some varieties of apples of known commercial value:

LAKE CHAMPLAIN DISTRICT

<i>Permanent</i>	<i>Filler</i>
McIntosh	Alexander
Famense	Oldenberg
Greening	Wealthy
Northern Spy	

HUDSON RIVER DISTRICT

<i>Permanent</i>	<i>Filler</i>
Baldwin	Alexander
Greening	Oldenberg
Fall Pippin	Wealthy
McIntosh	Rome
King	Sutton
	McIntosh
	King

SCHOHARIE-CATSKILL DISTRICT

<i>Permanent</i>	<i>Filler</i>
McIntosh	Alexander
Esopus	Oldenberg
Greening	Wealthy
Baldwin	
Northern Spy	

WESTERN NEW YORK

<i>Permanent</i>	<i>Filler</i>
Baldwin	Rome Beauty
Greening	Twenty Ounce
Northern Spy	Alexander
King	Oldenberg
	Wealthy

SOUTHERN TIER OF COUNTIES

Same as for Western New York

PEACHES

The production of a peach tree seems to begin to decrease after ten years of bearing. Usually it commences to bear when three years old.

<i>Varieties most tender in bud</i>	Champion
Early Crawford	Smock
Late Crawford	Stevens Rareripe
Niagara	Belle of Georgia
Chairs Choice	Greensboro
St. John	Hills Chili
Fitzgerald	Salway
Reeves Favorite	<i>Varieties most hardy in wood</i>
Globe	Elberta
<i>Varieties most tender in wood</i>	Carman
Early Crawford	Champion
Late Crawford	Smock
Niagara	Belle of Georgia
St. John	Greensboro
Chairs Choice	Crosby
<i>Varieties most hardy in bud</i>	Mills Chili
Carman	Stevens Rareripe
Crosby	

ENTOMOLOGICAL TEACHINGS

PEAR THRIPS

During the past year this pest has been found to exist throughout the Hudson River Valley, ranging from Monsey near the New Jersey State line to Albany, N. Y. It has been especially destructive in the region extending from Hudson to Germantown. This specie also exists in western New York, although it has not so far been destructive to fruit trees. This insect is thoroughly discussed in Geneva Bulletin 343.

GIPSY MOTII

The discovery of this pest in one locality in New York would indicate the possibility of its being present in other parts of the state. Institute lecturers are advised to secure illustrated chart from the Department of Agriculture, Albany, N. Y., and to call attention to the characteristic appearance of the caterpillars so they may be recognized from other common, native caterpillars.

PEAR PSYLLA

Great progress has been made in the control of this pest. There is no reason why it cannot be efficiently handled. Workers should secure Leaflet "O" of the Geneva Station.

GRAPE THRIPS

This pest has been especially destructive in Chautauqua County, in the Keuka-Lake region and in the Hudson River Valley. It has been successfully combated by using one gallon of "black leaf 40" to 1,600 gallons of water. Only one application need be made. Time to apply the spray is during July when the insects appear in numbers. Tobacco may be used with bordeaux mixture and arsenate of lead.

EARLY LEAF EATING AND FRUIT EATING INSECTS

There are a number of species, such as bud moth, case bearers, green fruit worm and canker worms which make their appearance during certain seasons and cause quite a little damage in some orchards. More emphasis should be placed by institute workers on

the importance of the treatments made after the buds show green and before blossoms appear. Systematic syringing of orchards by an approved spraying schedule, and cultivation of orchards are recommended.

CHERRY MAGGOT

A little-known cherry maggot has been discovered. This new species prefers the sour cherry and was found in abundance at Ithaca and Trumansburg. At the latter place it was found in company with the older cherry maggot. The first flies appeared on June 9 in a neglected cherry orchard and it was found that these flies deposited their eggs on June 24. Fifteen days therefore elapsed between the time of the appearance of the fly and the time the eggs were deposited. The spraying should be done within this period. The mature maggots were found on July 10; first spraying made on June 10, the day after the first flies appeared. The mixture used was as follows: Two and one-half pounds arsenate of lead, one and one-half gallons of cheap molasses, fifty gallons of water. The second spraying was done two weeks later. The fly is similar to the house fly in habits, going about sipping materials from the surface of fruit and leaves. No effort was made to get the spray on the tops of the trees, and the number of clean fruit seemed to show quite plainly that the spray mentioned will control the pest. The important thing to do is to reach the fly before it deposits the eggs. The cherry fly looks very much like the apple maggot fly except that one of the black bands on the wings has a white spot as if punctured.

APPLE MAGGOT

The apple maggot is largely controlled by ordinary spraying with arsenate of lead as for codling moth, and good cultivation of orchard. The application of the sweetened poisoned bait as for the cherry maggot has, during the past two years, completely controlled the apple maggot. When thoroughly mixed and sprayed upon the lower part of each tree, a few branches being covered, the adult flies will feed upon the poison and be killed before the eggs are laid. This remedy should be applied when the first adults of each brood appear, approximately about July 1 for the first brood, and August 20 for the second.

CUT WORM

The cut worm has been successfully controlled with poisoned bait. This is prepared as follows: One pound of paris green, 25 pounds bran or bran and middlings mixed, moistened with a mixture of one quart of cheap molasses to each gallon of water needed. This should be distributed under small pieces of boards or lightly covered with soil, near the plants likely to be injured with the worms. It should not be placed where chickens may get it as it will kill them. In one instance fully ninety per cent. of a cabbage crop was saved in rows treated as above.

SPRAYS

We recommend the lime-sulphur solution for control of San José scale, leaf blister-mite and for summer spraying of apple orchards. The schedule of spraying for apple orchards is outlined in Leaflet "U" of the Geneva Station. Arsenate of lead is the poison that we advise.

Where steam cooking outfits for lime-sulphur are at hand it has been found very easy to manufacture kerosene emulsion in large quantities. Kerosene emulsion spreads better than the tobacco preparations.

DRY SOLUBLE SULPHUR

We have analyzed several samples of this and we find that the material contains sulphur 56 per cent. and sodium 42 per cent. It is then not a lime-sulphur solution but a sodium-sulphur compound. For the treatment of orchards we still recommend the lime-sulphur preparation.

PLANT DISEASES

COLLAR ROT OF APPLE TREES

This disease occurs on almost any kind of ground and in the majority of cases is due to winter injury. Things which induce it are rapid growth, especially if the trees go into the winter with unripened wood; exposure due to locations; swaying of trees. It occurs not only at the base but on the trunk and in the crotches.

Extra rapid growth should be avoided and endeavor made to ripen the wood as much as possible in the fall. One of the most important things is to detect the first indications of the disease and treat them. Two inspections should be made of the orchard each year — the first early in the spring, about the first of May; the

second in July. Every tree should be carefully inspected, and if any slits in the bark are found or dead patches of bark, the dead bark should be cut away and the opening thoroughly disinfected with a weak solution of corrosive sublimate and covered with grafting wax if the tree is small, or if large, with gas tar or red lead paint. This protection will save the trees in the majority of cases. If neglected, the rot starts and the tree may be ruined. The disinfection of the wound is very important; otherwise the spores of the apple canker may get into the opening. Use corrosive sublimate 1 to 1000.

RASPBERRY ANTHRACNOSE

This disease causes spots to appear on canes and stems of raspberries.

Experiments for its extermination have been decidedly without results, and no treatment can be recommended. Spraying young canes four or five inches high and at successive short intervals with bordeaux mixture seems to be somewhat effective, but rather expensive.

CHESTNUT BARK DISEASE

No remedy for this has been found. Trees found to be infected should be cut immediately in order to save the wood. In western Pennsylvania it has been discovered that some of the so-called infections are not true chestnut bark disease.

POTATO SCAB

The formaldehyde gas treatment for potato scab is liable to injure the tubers, yet its use has been recommended as a preventive of scab. Recent tests show that the use of the gas treatment is dangerous and it is not recommended.

POTATO BLIGHT

There are three or four kinds of rot that affect potatoes, but most of the rot prevalent in this state is that produced by late blight. Potato rot is caused primarily by the fungus, *Phytophthora*, and wet weather is very favorable to the growth of the fungus. Thorough spraying will beyond all doubt prevent rot. Bordeaux mixture should be used (5-5-50) and spraying commenced when the plants are six or eight inches high. Spraying should be thor-

oughly done and frequently, five to eight times in a season, the more the better.

In selecting seed those that show rot should be sorted out, since there is no way to treat the seed to prevent blight. When weather conditions are right the blight is almost certain to appear and the only way known to control it is by spraying. The disease is carried in the tuber but we are not certain that it is not also carried in the soil. It is not important to refrain from planting potatoes on ground where the blight has occurred the previous season, so far as the disease is concerned, but it is not good farm practice.

Lime-sulphur is not to be recommended as a spray for potatoes. Bordeaux has been found in experiments to increase the yield 111 bushels to the acre, while lime-sulphur has decreased the yield 39 bushels to the acre.

The best time to dig potatoes that have the late blight depends somewhat as to when the potatoes can be marketed. If they can be put upon the market at once, the sooner they are dug the better, but if they are to be stored they should be left in the ground just as long as possible. The loss from rot will be less if they are left in the ground, and unless they can be sold, digging should be postponed until the tops are thoroughly dead and dry.

Rot does not spread in storage under ordinary conditions. If the potatoes are stored reasonably dry and cool, it is probable that the rot does not spread from one tuber to another; but where there is a large amount of moisture present, the rot will spread to some extent. The foregoing refers to the *Phytophthora* rot. Bacterial rots, where conditions are right, will spread.

The rot cannot be checked by mixing air-slaked lime with potatoes in storage. Three years' experiments prove that there is no benefit derived. Practically all of the infection which causes rot in storage occurs in the field and develops later.

FUSARIUM ROT

When selecting seed potatoes this can be detected by blackened tissue at the stem end. All such seed should be rejected.

POTATO WART DISEASE

Although this disease has not appeared in New York State, every farmer should be advised of its seriousness and how to detect it. Copy of placard, sample of which is shown on opposite page, was



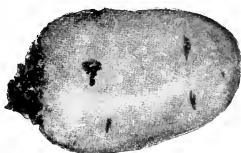
State of New York

Department of Agriculture

POTATO WART DISEASE CAUTION



This illustrates A DANGEROUS POTATO DISEASE which has appeared in Europe and New Foundland. It has not yet been found in the United States but MAY HAVE BEEN INTRODUCED.



No tubers from infected areas should be planted.

The greatest care by potato growers is necessary to avert SERIOUS DAMAGE.

TAKE NO CHANCES

See Bulletin No. 41, State Department of Agriculture, Albany, for fuller information.

Concealment of an outbreak of this disease is a violation of law. Report questionable cases to

CALVIN J. HUSON

Commissioner of Agriculture

posted at each institute and distributed to organizations. Bulletin No. 41, describing the disease, has also been widely distributed and copies are still available and will be sent upon request.

HOP MILDEW

Hop mildew is most prevalent in Otsego, Schoharie and Oneida counties, east of Oneida County, and to a considerable extent around Malone, Shortsville and Canandaigua.

At present in commercial growing, the plants are not trained so they can be sprayed with any degree of satisfaction. It is necessary to have a dust mixture which can be blown on the vines. Experiments show that a dust spray composed of pure flowers of sulphur was very effective in controlling this disease. When compared with a mixture of sulphur and lime the difference was strikingly in favor of the pure flowers of sulphur. Difficulty was experienced in obtaining a machine that will properly cover the vines with the dust spray. The two companies manufacturing machines which are the most satisfactory, and which are being remodeled to meet the requirements, are: The Kansas City Dust Sprayer Manufacturing Company and the Childs Company, Utica.

One should not apply less than forty or fifty pounds to the acre of the flowers of sulphur. Spraying should be begun about the time the branches start up the strings. The second application should be made when the flowers are in full blossom; the third when they are in the burr stage, and the fourth when one can get the sulphur into the overlapping bracts. In one instance twenty acres were gone over in one forenoon with horse and machine. The cost of the sulphur is about two cents per pound.

A number of brands of European sulphur of various grades have been found. Some of these run as high as 90 per cent. coarse brimstone. The ordinary flour sulphur is too heavy to use. It is not necessary that it be applied early in the morning, although that is perhaps desirable.

ONION SMIT

This disease, long known in Orange County, has been found in the vicinity of Canastota, Williamson and Fulton. A mixture of 100 pounds of flowers of sulphur to 50 pounds of slaked lime per acre, applied in the drills, has proven quite effective. The

machine for using this mixture is described in Geneva Experiment Station bulletin No. 182. The formalin drip where used was also found effective.

POULTRY HUSBANDRY

Professor Rice presented the results with a large number of hens covering a period of three years, trap nest records, which showed that as a general rule the greatest production was in the first year, the medium production in the second year, and the least production in the third year. In some cases hens laid more eggs each year for three years. We should breed fowls with the characteristic of maintaining their production for two or three years. We must breed in our hens the inherited quality to produce many eggs and then build size and vigor to sustain that production.

The average production of the one flock tested showed:

First year	153 eggs
Second year	136 eggs
Third year	127 eggs

If a hen has made her heaviest production the first year she is likely to produce more eggs the third than the second year. Therefore, hens that have laid well the first year can be profitably carried over to the third year.

There is an indication that the pullets that begin to lay earliest will produce the most eggs each year thereafter. A person should make the first selection for high production on the basis of the pullets of the same age and variety that begin to lay first. Generally this means that the best laying pullets hatched in April and May should lay before January, but as a scientific basis for selecting the highest producers, it is not wholly reliable. The fact that hens are high producers for years is proof that they have a strong constitution.

The question of well-sustained high production and inheritance and the ability to stand up under such heavy production, is the all important question.

The hens that were never broody laid more eggs than broody hens.

The hens that are low producers lay nearly all of their eggs when they are the cheapest; the highest producers lay when conditions are unfavorable and eggs are high.

The factor of late moulting is almost an invariable rule that will guide a man in selecting his highest producers.

A hen's temperature changes with the weather conditions, which may indicate why it is that Australia produces the most when we are producing the least and vice versa. We seem to get the highest production when temperatures are moderately high and the lowest when temperatures are extremely low or excessively high.

Capsules containing coloring matter can be fed to hens and the yolk will be affected in color, another dye colors only the protein matter. This has made possible observations which seem to show that the embryo chick has power in the process of digestion to make fat from the protein.

The matter of hatching with incubator or hens shows no noticeable difference in the vitality, productiveness or cost from the two methods. The percentages were found to be: Hen hatched, 31.74; Incubator hatched, 31.66.



REGULAR INSTITUTES

LECTURES

The greatest possible care was exercised in arranging the programs so that the subjects discussed would be of value to the particular community where the institute was held. Every phase of agriculture of interest to New York State farmers was discussed during the season. The addresses at the close of this report indicate the character of the work done.

From data contained in the seven thousand circulars already referred to, detailed information was secured in regard to places where institutes were to be held, covering the character and kind of agriculture followed, methods of marketing as well as buying, the proportion of tenant farmers, etc. These facts were tabulated and handed to the speakers who were to take part in the institute in order that they might the more intelligently deal with the farm problems.

ABSTRACTS OF LECTURES

Five hundred word abstracts of the addresses were printed on small sheets and distributed at the close of the meetings in order that those in attendance might have the facts in definite form to carry away with them. These were also available for the local papers.

QUESTION BOX

The "question box," as heretofore, was a marked feature of the institutes. Bulletin No. 44, Parts 1 and 2, which will be furnished on application to the Department of Agriculture, Albany, N. Y., is illustrative of this feature.

EXHIBITS

The communities where institutes were held were urged to make exhibits of farm products and in very many cases most creditable displays were made. The accompanying photograph of exhibit at Pekin, Niagara County, shows their character. The following is a list of the exhibits as shown there, and the quality was such

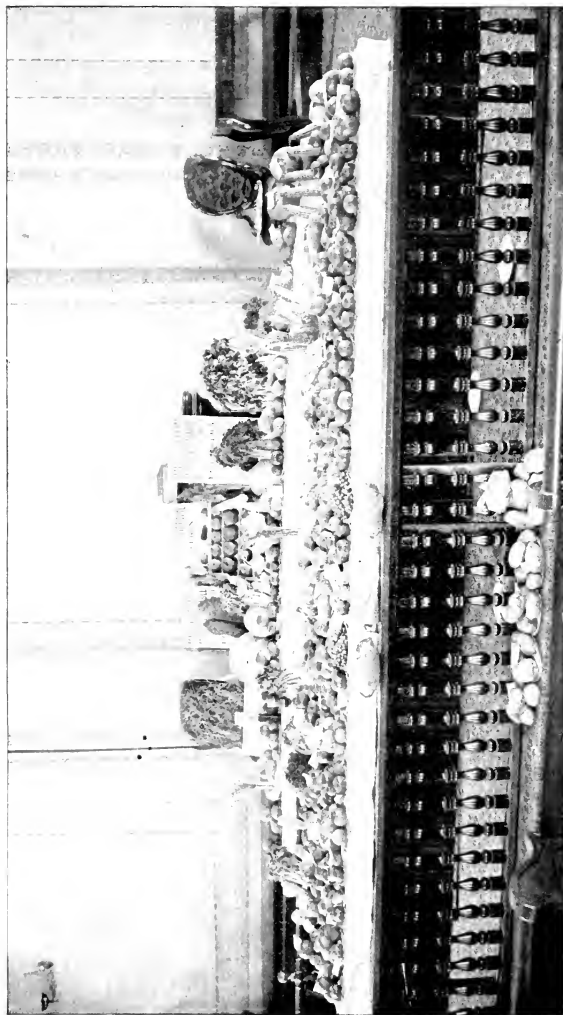


FIG. 104. EXHIBIT OF FARM PRODUCTS AT FARMERS' INSTITUTE, PEKIN, NIAGARA COUNTY, N. Y.

that it would have entitled them to awards at any of the leading fairs:

90 Exhibits, Apples	1 Exhibit, Escarollo
14 Exhibits, Potatoes	1 Exhibit, Lettuce
6 Exhibits, Carrots	2 Exhibits, Rye
4 Exhibits, Onions	2 Exhibits, Oats
4 Exhibits, Celery	1 Exhibit, Wheat
2 Exhibits, Cabbage	3 Exhibits, Cow Horn Turnips
1 Exhibit, Grapes	1 Exhibit, Red Clover
1 Exhibit, Nuts	2 Exhibits, Vetch
3 Exhibits, Carnations	1 Exhibit, Rape
1 Exhibit, Radishes	1 Exhibit, Buckwheat
1 Exhibit, Endive	1 Exhibit, Alfalfa

LITERATURE AT THE INSTITUTES

There were distributed at the sessions of the institutes thousands of the bulletins and circulars issued by this Department dealing with different topics.

INFORMATION ON PROGRAM PAGES

The following facts of value to farmers were printed on the backs of programs of the institutes:

FERTILITY FACTS

Comparative values of different forms of lime:

Value of Quick Lime	Slaked Lime	Equivalent value of Carbonate
\$8 00	\$6 05	\$4 50
7 00	5 50	3 95
6 00	4 55	3 40
5 00	3 80	2 80
4 00	3 05	2 25
3 00	2 30	1 70

For example: When one ton of quick lime can be bought for \$5, one ton of slaked lime should be bought for \$3.80; one ton of carbonate for \$2.80.

Average amount and value of solid and liquid manure produced by farm stock in one year:

	Solid Manure	Liquid Manure	Value per ton
Horse	12,000 lbs.	3,000 lbs.	\$2 00
Cow	20,000 lbs.	8,000 lbs.	1 80
Sheep	760 lbs.	380 lbs.	3 00
Pig	1,800 lbs.	1,200 lbs.	3 00

One ton of average cow manure contains:

8 to 10 lbs. of nitrogen—worth 12c. per lb.....	\$1 08
10 to 12 lbs. of potash—worth 4c. per lb.....	44
6 to 8 lbs. of phosphoric acid—worth 4c. per lb.....	28
Total.....	<u>\$1 80</u>

A great loss occurs in manure when it is left exposed, even if it does not fire fang. Manure left exposed in piles for 120 days loses about 50 per cent. of its nitrogen, 40 to 50 per cent. of its phosphoric acid and 60 per cent. of its potash.

Percentage Composition of Fertilizing Materials per 100 lbs.

	Nitrogen	Potash	Phos. Acid	Lime
Ashes (anthracite coal).....	.....	.10	.10	.....
Wood Ashes (unleached).....	.....	5.25	1.70	34.00
Bone Meal.....	4.05	.....	23.25	.....
Bone (dissolved).....	2.60	.....	17.60	.....
Nitrate of Soda.....	15.00	.....	.....	.....
Sulphate of Ammonia.....	20.50	.....	.....	.....
Dried Blood.....	10.52	.....	1.91	.....
Dried Fish.....	7.25	.....	8.25	.....
Cotton Seed Meal.....	6.79	1.77	2.88	.....
Tankage.....	6.70	.....	11.80	.....
So. Carolina Rock (dissolved).....	.....	.....	15.20	.....
So. Carolina Rock (floats).....	.....	.....	*28.03	41.87
Basic Slag.....	.....	.....	18.00	25.00
Kainit.....	.....	13.54	.....	1.15
Muriate of Potash.....	.....	50.00	.....	.....
Sulphate of Potash.....	.....	48.00	.....	.....

CORNELL RATIONS FOR LAYING HENS

The following whole grain mixture is fed morning and afternoon in a straw litter:

Winter	Summer
32 qts. wheat	32 qts. wheat
36 qts. corn	36 qts. corn
30 qts. oats	30 qts. oats
20 qts. buckwheat	

The following mash is fed dry in a hopper kept open during the *afternoon only*:

Winter and Summer
57 qts. corn meal
71 qts. wheat middlings
57 qts. wheat bran
20 qts. alfalfa meal
8 qts. oil meal
43 qts. beef scrap
$\frac{1}{2}$ qt. salt

The fowls should eat about one-half as much mash by weight as whole grain. Regulate the proportion of grain and ground feed by giving a light feeding

* Undissolved.

of grain in the morning and about all they will consume at the afternoon feeding (in time to find grain before dark.) In the case of pullets or fowls in heavy laying, restrict both night and morning feeding to induce heavy eating of dry mash, especially in the case of hens. This ration should be supplemented with beets, cabbage, sprouted oats, green clover or other succulent food, unless running on grass-covered range. Grit, cracked oyster shell and charcoal should be accessible at all times. Green food should not be fed in a frozen condition. All feed and litter used should be strictly sweet, clean and free from mustiness, mold or decay. Serious losses frequently occur from disease, due to the fowls taking into their bodies, through their intestinal tract or lungs, the spores of the fungus causing molds.

Results at Cornell, 1909-10, Twelve Months' Records

Best pullet (No. 3211) laid 257 eggs.

Next pullet (No. 3352) laid 245 eggs.

15 highest producing pullets averaged 236 eggs each.

Best single flock pullets averaged 182 eggs each.

FACTS TO REMEMBER

A silo 12 ft. diameter, 24 ft. deep, will contain 48 tons and will keep ten cows for 240 days.

A silo 15 ft. diameter, 24 ft. deep, will contain 72 tons and will keep fifteen cows 240 days.

A silo 14 ft. diameter, 30 ft. deep, will contain 96 tons and will keep twenty cows 240 days.

Note: Allowance should be made for settling from 3 to 6 ft.

With plants 3 ft. x 3 ft. an acre will contain 4,840 plants.

With plants 3½ ft. x 3½ ft. an acre will contain 3,555 plants.

With plants 6 ft. x 6 ft. an acre will contain 1,210 plants.

Orchard planting:

25 ft. x 25 ft. = 69 trees.

40 ft. x 40 ft. = 27 trees.

Yield of a good crop of Farm Products per acre.

Alfalfa	4 tons
Barley	50 bu.
Beans	20 bu.
Buckwheat	20 bu.
Cabbage	3 tons
Clover	2½ tons
Corn (Shelled)	50 bu.
Hay	2 tons
Mangels	24 tons
Millet	3 tons
Oats	50 bu.
Potatoes	200 bu.
Rye	20 bu.
Wheat	25 bu.

Pasture Mixtures

For Heavy Ground:	Seed	For Lighter Soil:	Seed
Kentucky Blue Grass.....	25 lbs.	Canada Blue Grass.....	5 lbs.
White Clover	10 lbs.	Red Clover	5 lbs.
Perennial Rye Grass.....	30 lbs.	Orchard Grass	5 lbs.
Red Fescue	10 lbs.	Tall Oat Grass.....	5 lbs.
Red Top	25 lbs.	Perennial Rye Grass.....	20 lbs.
		Red Top	35 lbs.
Sow 35 lbs. per acre.		Sow 40 to 45 lbs. per acre.	

DAIRY FACTS

Average composition of various kinds of milk

	Water	Fat	Casein and albumen	Milk sugar	Ash
Human.....	87.41	3.78	2.29	6.21	.31
Mare.....	90.78	1.21	1.99	5.67	.35
Cow.....	87.17	3.69	3.55	4.88	.71
Ewe.....	80.82	6.86	6.52	4.91	.89
Goat.....	85.71	4.78	4.29	4.46	.76
Sow.....	82.51	5.78	6.34	4.37	1.00

Relation of fat to casein in cow's milk.

Total solids	Fat	Solids not fat
11.00	3.07	7.93
12.00	3.50	8.50
13.00	3.99	9.01
14.50	4.93	9.47
16.00	6.00	10.00

Milk prices by measure and weight.

Cents per quart	Value per 40 qt. can	Value per 100 lbs.
\$0.02	\$0.80	\$0.93+
.025	1.00	1.16+
.03	1.20	1.40—
.035	1.40	1.63—
.04	1.60	1.86+
.045	1.80	2.09+
.05	2.00	2.33—

Pounds of milk required to make a pound of butter:

Milk	Pounds milk for 1 lb. butter
3.0 %	29.0
3.6 %	24.2
4.0 %	21.7
4.4 %	19.8
5.0 %	17.4
6.0 %	14.5

THE RELATIVE NET ENERGY IN CORN-MEAL, TIMOTHY HAY AND WHEAT STRAW

Per cent. of the total

Total energy—%	Lost in feces %	Lost in gas %	Lost in urine %	Lost in labor %	Total loss %	Net energy %
100 lbs. corn-meal.....	9.2	9.3	3.9	36.3	58.7	41.3
100 lbs. timothy hay.....	48.9	3.8	3.1	29.5	85.3	14.7
100 lbs. wheat straw.....	54.8	9.0	2.5	27.7	94.0	6.0

In this table it is apparent that only 41.3 per cent. of the total energy of corn is available for milk production, that is, as net energy. In timothy hay only 14.7 per cent. of the total energy is net, while in wheat straw only 6 per cent is net.

Selection of Grains and Other Concentrates

In selecting concentrates to combine as a grain mixture, the following factors should influence the selection:

Cost, that is, the real price at which each will supply digestible protein and net energy.

Effect on the system or health of the cow.

Palatability.

Bulk.

Variety.

Corn-meal	} Cheapest source of net energy Cheapest source of protein Light and bulky, moderate cost of protein Adds variety and protein at moderate cost
Cottonseed meal	
Distillers' dried grains	
Gluten feed	

	Protein	Net energy
A cow weighing 1,000 lbs. requires.....	.5	6.
To produce 20 lbs. of milk testing 4% requires.....	1.0	6.
Total required per day.....	1.5	12.

CONTROL OF FRUIT TROUBLES

<i>Bud Moth</i>	} Spray with 2 pounds of Arsenate of Lead to 50 gallons water. Apply when first green leaves appear.
<i>Case Bearers</i>	
<i>Tent Caterpillars</i>	

Oyster Shell and Scurry Scale.—Spray branches with a 10 per cent. kerosene emulsion or 1 pound whale oil soap to 5 gallons water, applied within ten days after eggs hatch in June.

Aphides.—Spray when noticed with a 4 to 10 per cent. kerosene emulsion, ordinary laundry soap 1½ pounds to 4 gallons water, or tobacco extracts.

Apple Maggot.—Twice a week pick up and feed to pigs or bury all drop apples; or about July 1st spray foliage of a few small branches upon susceptible trees with a sweetened poison spray consisting of 2 pounds of Arsenate of Lead, 1½ gallons cheap syrup and 50 gallons of water.

Codling Moth.—Apply Arsenate of Lead, 3 pounds to 50 gallons water, to the upturned fruit immediately after blossom petals drop.

Apple Scab.—Apply Bordeaux or diluted Lime-Sulphur after blossoms separate but before they open; again soon after petals fall and repeat three or four weeks later.

Apple Cankers.—Cut off all badly diseased branches, remove diseased areas upon large branches or trunk, and disinfect wounds and paint them. Annual spraying with fungicides and removal of diseased branches soon greatly reduces this trouble.

Do All Spraying Thoroughly

For details of above consult Circular No. 58, New York State Department of Agriculture, to be distributed at this Institute.

INSECT ENEMIES AND FUNGOUS DISEASES OF THE GRAPE AND THEIR CONTROL

Steely Flea Beetle.—Spray with 3 pounds of Arsenate of Lead and 1 gallon of molasses in 50 gallons of water when the insects first appear. The larvae appear on the foliage about July 1 at the same time as the beetle of the grape root worm. At this time spray as for grape root worm.

Grape Root Worm.—The adult is a reddish brown beetle which appears about the first of July and eats chain-like holes in the leaves. Eggs are laid for about six to eight weeks after the middle of July. They hatch in two or three weeks, drop to the ground and feed upon the roots. At this time, soil should be cultivated deeply. Spray foliage with 3 pounds of Arsenate of Lead and one gallon of molasses in 50 gallons of water, when beetles begin to feed.

Rose Chafer.—Spray, when beetles appear, with 4 pounds of Arsenate of Lead and 12 pounds glucose in 50 gallons of water. Clean culture and deep cultivation the last of April or first of May.

Grape Leaf Hopper.—Small yellowish white bugs with wings, when adult. Adult passes winter in rubbish and in fence rows. They appear as soon as leaves open, feeding upon the under side. Eggs are laid about June 15. Spray with "Black Leaf 40," one part to 1,600 parts of water early in July. Spray under side of foliage thoroughly.

Black Rot.—Spray with 4-4-50 Bordeaux Mixture preferably before rainy periods, when the second and third leaf is forming. Again soon after the blossoms fall and later at intervals of ten days. Spray with high pressure and thoroughly cover fruit clusters and tips of vines. If late summer is wet, the above spraying should be followed by two more, using ammoniacal copper carbonate at intervals of ten days.

Powdery Mildew.—Spraying for black rot will control this fungus.

Necrosis or Side Arm Disease.—Remove and burn all diseased portions, training new arms from the main stem to take their places. If the trunk of the vine is infected at the ground there is no cure and the plants should be dug and burned.

For further information see Circular No. 58, State Department of Agriculture, Albany, N. Y.

ROUND-UP MEETINGS

The following program of the Albion, Orleans County, three-day round-up meeting will give an idea of the character of the work done at similar meetings during the winter, where a day each was assigned to soils, livestock, farm crops and horticulture, with a definite time at the close of each address for discussion while the topic was fresh in the mind, and the evenings given over to addresses on broad themes. This plan seems to work admirably both from the standpoint of giving instruction in a logical way and centering the thought along one line, as well as enabling those who cannot be present at all the sessions to attend those devoted to the particular line in which they are interested.

Albion has a record that deserves special notice, this being the twenty-fifth consecutive meeting held there. An institute was held at Albion the second year after the institute movement was inaugurated in the state. The same correspondent, Mr. John Bidelman, served as efficiently at this meeting as he did at the last, he having been in continuous service. Of the twenty-five meetings held at Albion the present Director of Farmers' Institutes attended twelve and conducted eleven.

Albion is in one of the best farming and fruit sections in the state. Nowhere are men more intelligent or more successful farmers, and the support given this meeting would seem to attest to the value and practicability of the institute work as a whole. In the early years no other institute was held in the county, and the attendance has always been large. Later other institutes were held in adjoining towns. This year there were seven places in the county that had regular institutes. Unlike most places under similar conditions, instead of the interest decreasing at the central point, it has steadily increased. The meetings have usually been held in the court house, the capacity of which has often been taxed to accommodate those present. This year it was held in the Catholic hall, a building seating between five and six hundred, and during the afternoon sessions there were many standing. The total number in attendance, including women's and poultry sessions held in the lecture room of the Presbyterian Church, aggregated 2,755.

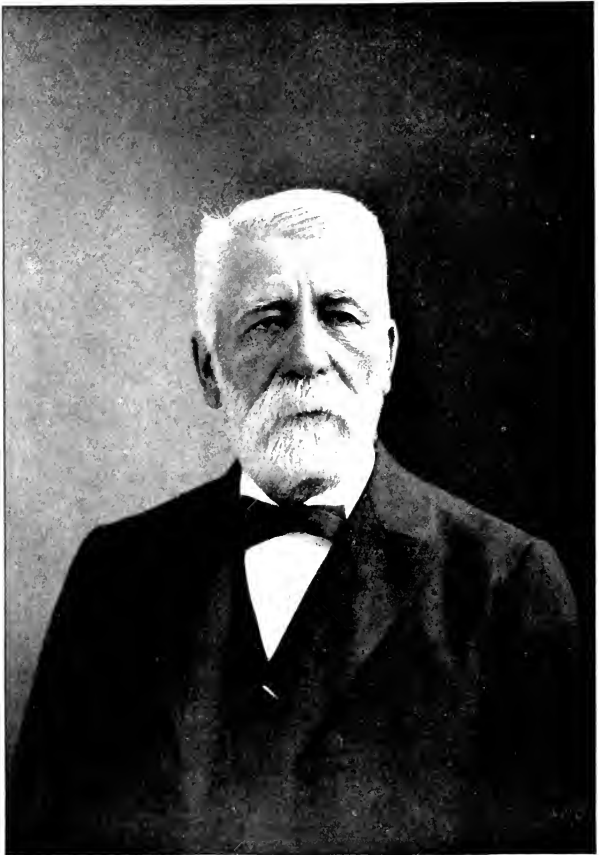


FIG. 105.—JOHN BIDELMAN

Bureau of Farmers' Institutes

EDWARD VAN ALSTYNE - - - - - Director

"When tillage begins, other arts follow. The farmers therefore are the founders of human civilization."

Webster

FARMERS' DAYS

AT

ALBION

Orleans County

**TUESDAY, WEDNESDAY AND THURSDAY,
FEBRUARY 25, 26, 27, 1913**

IN

COURT HOUSE AND PRESBYTERIAN CHURCH

In charge of	- - -	Director Edward van Alstyne
Correspondents {	Orleans County	- John Bidelman, Albion
	Niagara County	- E. J. McClew, Newfane
	Monroe County	- Stanley Todd, Pittsford

New York State Department of Agriculture

CALVIN J. HUSON

Commissioner

PROGRAM

TUESDAY

SOIL FERTILITY DAY

COURT HOUSE

- 9:00 A. M. REV. GODFREY CHABOT — Prayer.
HARRY WELLMAN — Address of Welcome.
DIRECTOR VAN ALSTYNE — Response and Outline of Work.
- 10:00 A. M. MR. BARKER — The Composition of Soils.
- 10:30 A. M. DISCUSSION.
- 10:45 A. M. PROF. FIPPIN — Drainage.
a. Importance.
b. Method.
- 11:15 A. M. DISCUSSION.
- 11:30 A. M. MR. HENRY — Importance and Method of Tillage.
- 1:30 P. M. ROUND TABLE.
- 2:00 P. M. MR. CURTIS — Humus.
a. Importance.
b. How to Obtain it.
- 2:30 P. M. DISCUSSION.
- 2:45 P. M. MR. BARKER — Lime.
a. Its Value.
b. Different Forms.
- 3:15 P. M. DISCUSSION.
- 3:30 P. M. MR. HENRY — Manure and the Best Way to Apply it.
- 4:00 P. M. DISCUSSION.
- 4:15 P. M. MR. CURTIS — Commercial Fertilizers.
a. Ingredients.
b. Combinations.
- 7:45 P. M. DIRECTOR VAN ALSTYNE — Agricultural Conditions and Possibilities
DEAN BAILEY — Address.

WEDNESDAY

STOCK AND CROP DAY

COURT HOUSE

- 9:00 A. M. MR. HENRY — Demonstration of Essential Points in a Good Horse.
- 10:00 A. M. MR. VAN WAGENEN — Feeding and Care of the Dairy Cow.
- 10:30 A. M. DISCUSSION.
- 10:45 A. M. MR. HENRY — Swine and Their Treatment.
- 11:15 A. M. DISCUSSION.
- 11:30 A. M. DIRECTOR VAN ALSTYNE — Profit in Sheep.
- 1:00 P. M. MR. VAN WAGENEN — Demonstration of Essential Points in a Good Dairy Cow.

COURT HOUSE

- 2:00 P. M. ROUND TABLE.
 2:30 P. M. DR. VOLGENAU — Diseases of Domestic Animals.
 3:00 P. M. DISCUSSION.
 3:15 P. M. DIRECTOR VAN ALSTYNE — Potatoes.
 3:45 P. M. DISCUSSION.
 4:00 P. M. MR. BARTON — Crops for the Cannery.
 7:45 P. M. MR. HALL — What the New York Agricultural Experiment Station is Doing for the Farmer (Illustrated).
 MR. VAN WAGENEN — The Good Farmer.
-

TUESDAY

POULTRY SESSIONS

SCHOOL ROOM, PRESBYTERIAN CHURCH

In charge of Prof. Rice

- 10:00 A. M. PROF. RICE — Opening Remarks.
 10:15 A. M. MR. LEWIS — Breeding Poultry.
 10:45 A. M. DISCUSSION
 11:00 A. M. PROF. RICE — Incubators and Brooders.
 11:45 A. M. DISCUSSION.
 1:30 P. M. QUESTION BOX.
 2:00 P. M. MR. LEWIS — Care and Feed for the Little Chick.
 2:45 P. M. DISCUSSION.
 3:00 P. M. PROF. RICE — Management of the Laying Hen.
 3:45 P. M. DISCUSSION.
-

WEDNESDAY

SPECIAL WOMEN'S SESSIONS

SCHOOL ROOM, PRESBYTERIAN CHURCH

In charge of Mrs. Harrington

- 10:00 A. M. MRS. HARRINGTON — Opening Remarks.
 10:15 A. M. MRS. JOHNSON — Practical Ways and Means for Making Home Attractive.
 11:00 A. M. DISCUSSION.
 11:15 A. M. MRS. HARRINGTON — Kitchen Emergencies and Makeshifts.
 1:30 P. M. QUESTION BOX.
 2:00 P. M. MRS. JOHNSON — City or Country — Which Shall it Be?
 2:45 P. M. MRS. HARRINGTON — Foods and Their Preparation.
-

THURSDAY

HORTICULTURAL DAY

COURT HOUSE

- 9:30 A. M. MR. BARTON — Cover Crops for the Orchard.
 9:45 A. M. DISCUSSION.
 10:00 A. M. PROF. HEDRICK — Desirable Fruits for the Lake Region.
 10:30 A. M. DISCUSSION.
 10:45 A. M. PROF. PARROTT — The Past Year's Experience with Insects.
 11:15 A. M. DISCUSSION.
 11:30 A. M. PROF. REDDICK — The Past Year's Experience with Diseases.

- 1:30 P. M. ROUND TABLE.
 2:00 P. M. MR. BARTON — Profitable Peach Culture.
 2:30 P. M. DISCUSSION.
 2:45 P. M. PROF. PARROTT — The Spray Mixtures.
 3:15 P. M. DISCUSSION.
 3:30 P. M. PROF. REDDICK — Pear Blight.
 4:00 P. M. DISCUSSION.
 4:15 P. M. PROF. HEDRICK — Recent Progress in Fruit Culture.
 4:40 P. M. DIRECTOR VAN ALSTYNE — Closing Words.

SPEAKERS

- DR. L. H. BAILEY, Ithaca
 Director, New York State College of Agriculture at Cornell University
- JOSEPH F. BARKER, Geneva
 In Charge of Soil Investigations, New York Agricultural Experiment Station
- CHAS. D. BARTON, Marlton, N. J.
 Farmers' Institute Lecturer
- J. G. CURTIS, Rochester
 Farmers' Institute Lecturer
- E. O. FIPPIN, Ithaca
 Professor of Soil Technology, New York State College of Agriculture
 at Cornell University
- F. H. HALL, Ithaca
 Editor and Librarian, New York Agricultural Experiment Station
- MRS. IDA S. HARRINGTON, Ithaca
 Farmers' Institute Lecturer
- U. P. HEDRICK, Geneva
 Horticulturist, New York Agricultural Experiment Station
- FOREST HENRY, Dover, Minn.
 Farmers' Institute Lecturer
- MRS. JANE S. JOHNSON, New York City
 Farmers' Institute Lecturer
- MARION LEWIS, Cameron Mills
 Farmers' Institute Lecturer
- P. J. PARROTT, Geneva
 Entomologist, New York Agricultural Experiment Station
- DONALD REDDICK, Ithaca
 Professor of Plant Pathology, New York State College of Agriculture at
 Cornell University
- JAMES E. RICE, Ithaca
 Professor of Poultry Husbandry, New York State College of Agriculture at
 Cornell University
- EDWARD VAN ALSTYNE, Kinderhook
 Director of Farmers' Institutes, State Department of Agriculture
- JARED VAN WAGENEN, JR., Lawyerville
 Farmers' Institute Conductor and Lecturer
- DR. E. L. VOLGENAU, Buffalo
 Veterinarian and Farmers' Institute Lecturer

FARM EXTENSION WORK

The "follow-up" work commenced by this bureau two years ago has been carried on with success. The desire for individual advice is becoming greater each year as the establishment of farm bureaus in various counties indicates.

The results of such advice, given under the direction of the Farmers' Institute Bureau, during the past two years, are very apparent. Many fields of alfalfa are now established and yielding good returns; and renovated orchards have been a source of much profit to their owners. A vast saving has resulted to many farmers who have sought and received advice in drainage problems. The necessity for drainage is now being quite generally recognized and a large percentage of the farms visited desired information as to the best methods. In many instances plans for the drainage of large areas on individual farms have been laid out.

During the period covered by this report, Mr. D. P. Witter, Farmers' Institute Conductor, visited 378 farms and gave instruction in drainage, orchard renovation and improvement, and the growing of alfalfa and leguminous crops. Particular attention has been given to the growing of soy beans alone, and with corn, and the reports of such experiments have been very satisfactory; also, in the selection of seed, cultural methods and the spraying of potatoes. The following, showing the results of seed selection with potatoes, is a sample of the work done and the returns:

Farm No. 1. This experiment was made with one hundred tubers, and the seed was the result of two years selection. Each potato was cut in four pieces and the four hills planted from each tuber were considered as the unit in selecting the seed. The one hundred potatoes thus cut when planted made four hundred hills. Out of each one hundred hills eighty-four were set aside as the hills from which to select the seed for the following year. Some of the rejected hills gave a yield large enough to put them in the

class of selects, but as some of the tubers were "nubby" or deformed they were rejected on that account.

The sixteen rejected hills out of each one hundred weighed $34\frac{1}{2}$ pounds or at the rate of $180\frac{1}{2}$ bushels an acre.

Sixteen selected hills out of the 84 selected hills weighed $64\frac{1}{2}$ pounds or at the rate of 335 bushels per acre.

The unselected seed gave yield of 170 bushels per acre.

The variety was the Green Mountain.

Farm No. 2. The seed for this experiment was saved the preceding year, being taken from the largest yielding hills as they were dug in the field. However, since part of the seed thus saved froze during the winter, it was necessary to select some from the bin. Every other row of each variety was planted with seed selected from the bin in the usual way, and the alternate row was planted with the field-selected seed by the four-hill method. The land had been made rich with manure some years ago, but when prepared for planting the only fertilizer used was 300 pounds of acid phosphate per acre. The results follow:

	Bushel per acre
American Banner variety, yield from selected seed.....	484 $\frac{4}{9}$
American Banner variety, yield from bin selection, same care.....	440 $\frac{2}{5}$
World's Wonder variety, yield from selected seed, four-hill method..	581 $\frac{1}{3}$

Accompanying photographs show yields from one potato of selected seed. These were not much above the average. Four hills dug from another row of the World's Wonder variety showed yield from one tuber of fifty-eight marketable potatoes and two small potatoes, weight 20 pounds, or at the rate of $807\frac{2}{5}$ bushels per acre. These hills were considerably above the average and were not used in results above shown. All of the potatoes were planted in rows three feet apart, eighteen inches in the row.

Farm No. 3. Seed used in this experiment was carefully selected for several years. The ground, however, was not well adapted to potato growing. The yield per acre from these selected tubers was $375\frac{4}{5}$ bushels per acre — variety, Sir Walter Raleigh.

Farm No. 4. Seed from first year's selection by the four-hill method gave yield of 274 bushels per acre; the same variety, not

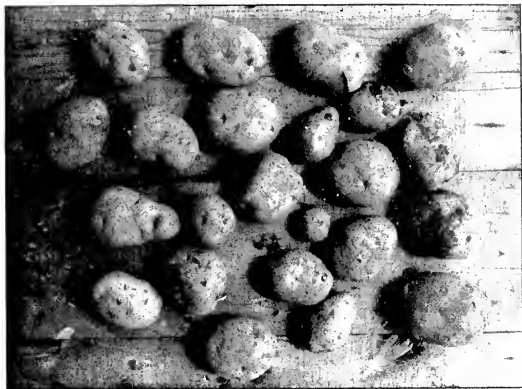


FIG. 106.—PRODUCT OF ONE POTATO, FARM No. 2
One four-hill unit, 23 marketable potatoes.
Weight 15 pounds; rate per acre 605½ bushels.
Variety, American Banner.

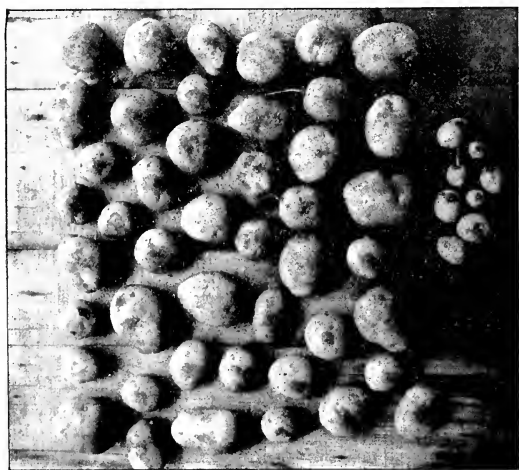


FIG. 107.—PRODUCT OF ONE POTATO, FARM No. 2.
One four-hill unit, 44 marketable, 8 unmarketable potatoes.
Weight 15½ pounds; rate per acre 625¾ bushels.
Product of one average row, 581½ bushels per acre.
Variety, World's Wonder.

selected with special care, planted the same time and given the same treatment, yielded 238 bushels. This was a difference in favor of selection the first year of 36 bushels.

Mr. Fred E. Gott, Farmers' Institute Conductor, Spencerport, visited 149 farms, giving particular attention to horticulture and drainage.

In addition to these thirty other places were visited by the director and others. Some samples of this work follow.

SPRAYING DEMONSTRATION AT CHARLTON, SARATOGA COUNTY

Under the direction of the Bureau of Farmers' Institutes, William Hotaling of Kinderhook carried on the following demonstration work to determine the effectiveness of spraying for codling moth, at the Industrial Farm, Charlton, Saratoga County, in accordance with an arrangement made by Mr. van Alstyne at the Farmers Institute held the previous winter.

After inspecting a number of orchards in the neighborhood, Mr. Walter J. Cavert and Mr. Hotaling finally decided the one at the above farm was the most available for the purpose. While the conditions were not perfect there, they were as good as will be found in most places where fruit is not very extensively grown.

The orchard is about fourteen years old, mostly Baldwin and Ben Davis, fairly well grown and taken care of. The particular part of the orchard selected to be sprayed for the experiment contained trees Nos. 6-7-8-9-10-11, in the twelfth row from the highway, and to be left as a check or unsprayed trees Nos. 2-3-4 and 5 in the fourteenth row from the highway. These were all Baldwins.

The trees were sprayed with lime-sulphur solution at the rate of one gallon of the concentrated article, testing 33° Beaumé, to 40 gallons of water, with three pounds of arsenate of lead added for every 50 gallons of the mixture. The work was done on May 31 and the blossoms were in about their best stage at this time, the petals having fallen and the calyx leaves being open.

Neither equipment or conditions were as good as should be had by any farmer making a pretense of spraying. The only thing available was a barrel sprayer, badly out of repair and with poor equipment. The day was very windy and a fine mist fell part of

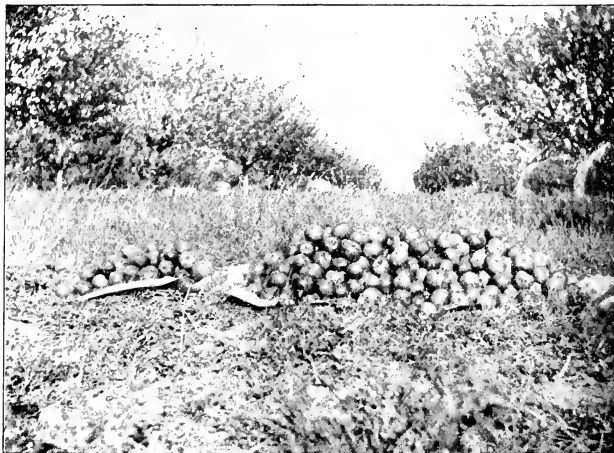


FIG. 108.— PRODUCT OF SPRAYED TREE NO. 8.
Wormy fruit on left.

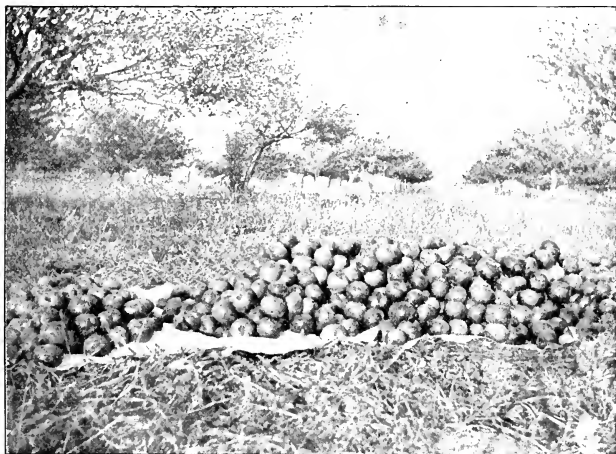


FIG. 109.— PRODUCT OF SPRAYED TREE NO. 10.
Wormy fruit on left.

the time. The work was done by the boy inmates, under eighteen years of age, at the direction of Mr. Hotaling. Later all the surrounding trees, except the checks, were sprayed under the direction of the superintendent of the farm.

On October 9th Mr. Hotaling returned to the Industrial Farm to count the fruit and note the result of the demonstration. The trees that were designated for comparison in the sprayed plot were taken first and all fruit was gathered from both ground and tree and a careful count and inspection made. Where there was any doubt the fruit was cut. The fruit from the unsprayed check trees was next handled in the same manner. Below is given the result of the experiment, the trees mentioned being average trees:

SPRAYED				
	No. Apples	Fair	Wormy	Per cent Wormy
Tree No. 8.....	649	528	121	18.6
Tree No. 10.....	884	751	133	15.0
UNSPRAYED				
Tree No. 4.....	523	158	365	69.8

Under the adverse conditions mentioned this means that the sprayed trees had fifteen to eighteen barrels out of every hundred that were worthless or second class, because of the worms, while the trees left unsprayed showed sixty-nine barrels out of every hundred worthless or second class. The photographs on page 1629 show product of the sprayed trees Nos. 8 and 10.

"FOLLOW UP" WORK AT LINCOLN AGRICULTURAL SCHOOL

On January 28, 1912, Dr. Ellis M. Santee spoke upon poultry at a Farmers' Institute, held at the Lincoln Agricultural School, Lincolndale, N. Y. This institution is devoted to the training of poor or delinquent boys from cities, in the different branches of agriculture. A few days later the Department received a request from the director of the school asking that the doctor be sent there to instruct them in the proper method of organizing a poultry department. They had recently killed off all their fowls because they were not profitable. Their poultry house was unfit for the purpose and had been taken for a calf pen.

In response to this request this bureau sent Dr. Santee to the

school for two days. He remained somewhat longer at his own charges. He lectured on breeding, incubation, rearing, feeding and buildings, after which an examination was held for the purpose of selecting ten boys out of the 200 to care for the poultry. Over fifty qualified. Another examination was held and eleven boys were selected, one being designated as captain to take charge. Under the doctor's direction the boys built ten 8 x 8 colony houses of the Cornell type. These were hauled upon a stone boat to various parts of the farm where the fowls could have free range and a boy put in charge of each, which contained fifteen hens and one male bird, selected and purchased by the doctor. The boys were taught the use of tools and how to make their own poultry appliances.

The following extract from a letter written by Rev. Brother Barnabas, the director of the school, indicates the success and value of such "follow up" work:

"In a course of lectures extending over a period of ten days, Dr. Santee gave the boys of the school a practical and general knowledge of poultry, and developed the subject as well as the age and intelligence of the boys would permit. The following is a brief outline of the work of Dr. Santee while at the school:

BREEDS

- 1 Different breeds
- 2 What makes a breed
- 3 Origin of the different breeds
- 4 The different classes of American breeds
- 5 The characteristics and distinguishing features of the different breeds
- 6 How to distinguish one breed from another
- 7 Breeds most suited for poultry business in New York State

SELECTION OF HENS

- 1 Good points of a laying hen
- 2 How to select according to these points
- 3 When to select the young chicken for laying and breeding purposes
- 4 How to discard the delicate, ill-formed chicken and cockerel

FEEDING

- 1 Different kinds of feed required to make hens lay
- 2 When, and how much feed should be given
- 3 How to prepare feed to obtain the best results
- 4 How to get and care for food used during the winter months

INCUBATING

- 1 The practical use of the artificial incubator
- 2 How to use the same
- 3 How to tell a broody hen

- 4 What to do with a broody hen
- 5 Selection and care of eggs intended for future incubators
- 6 Number of eggs to be put under hen
- 7 Examination of eggs that are being incubated to test their fertility
- 8 The length of time required for the incubation of the turkey's egg — the duck's egg — the chicken's egg — the pigeon's egg

CARE OF HENS

- 1 Common diseases of hens
- 2 Simple remedies for these diseases
- 3 How and where the sick hen should be attended
- 4 Proper feeding

CARE OF CHICKS

- 1 Proper housing for the first six weeks
- 2 Proper feeding for the first six weeks
- 3 How to protect them from hawks and other enemies

COCKEREL

- 1 Good points in cockerel
- 2 Selection of best cockerels
- 3 Number of hens to one cockerel
- 4 Fattening those intended for the table

POULTRY HOUSES

- 1 Economical poultry house
- 2 How to build the economical fresh air poultry house
- 3 Best position for the poultry house, and why
- 4 Utensils used in poultry house and how to make them at home
- 5 Defects and good points in present day poultry house
- 6 Cleanliness necessary in every poultry house

After going over the above outlined course very slowly and thoroughly, the doctor then taught the boys by practice work, how to build an economical open air poultry house. Being thus directed and assisted by him, the boys built ten new chicken houses, each holding twenty chickens.

Thus, too, did he assist them in establishing on the school grounds, the poultry houses which were to serve for future generations, to teach the new comers in a practical way, how to care for the stock which would be entrusted to them after they had spent their allotted time in the school, and were sent out on the farms of the Empire State to be agriculturists and poultrymen of the future.

Having established the poultry houses on the school grounds, and stocked the same with 120 of the best Wyandottes, Dr. Santee concluded his course in poultry by a very interesting stereopticon lecture. Pictures of the different breeds were thrown on the screen, and the distinguishing points of each explained. The doctor also explained the good and bad points of the various breeds of poultry and the poultry houses now in use and which he showed on the screen.

The painstaking efforts of Dr. Santee were not without their reward, for the boys gave assiduous attention to his teaching. The results must have been very gratifying and encouraging to him for an examination held immediately after his course showed that the boys had not only heard what he taught, but

had also retained the information well; and he could see that, with a reasonable amount of practical work and experience, as a supplementary to his splendid efforts every one of the two hundred boys of the Lincoln School who were privileged to attend his lectures would be able to care for any poultry department entrusted to them, and do credit not only to themselves, but also to their teacher, Dr. Santee."

"FOLLOW UP" WORK AT BERKSHIRE INDUSTRIAL FARM

The Berkshire Industrial Farm is a private charity located at Canaan, Columbia County. This institution cares for about eighty delinquent boys. Dr. E. S. Santee, Farmers' Institute Lecturer, was sent to the farm at the request of the management to give advice and assistance in reorganization of the buildings and the dairy. He visited the farm for three days in April and while there superintended the erection of a poultry house 20 by 80 feet, the work being done by the boys. The roof was donated and with some old material on the farm the building was erected at a cash outlay of less than one hundred dollars. This building is well worth \$500. The other buildings on the place were very unsanitary as well as inconvenient and incomplete.

In August, Dr. Santee again visited the farm for a week at the expense of the department, remaining longer under pay from the institution. He superintended the erection of a horse barn, dairy building and green house, and remodeled the piggery and cattle barn as well as installed a water system. He also assisted in the elimination of a number of unprofitable cows and the selection in their places of better ones, and instructed the boys in milk testing and sanitary methods in the stables. Since that time the cattle and dairy have been under the charge of the boys and in the history of the institution have never been so well cared for or so profitable.

The following report to this Department by Dr. Santee will give not only an idea of some of the work done, but may be suggestive to others in like case. It was the testimony of the management that the Doctor had been instrumental in saving the institution at least \$2,000, in addition to giving them a most practical, well-equipped plant.

HORSE BARN — The new horse barn is 60 feet by 21 feet, sidewalls 9½ inches thick, building of concrete, with a continuous 2½-inch air space from bottom to top; stucco finish inside and out. The stable floor is of concrete except

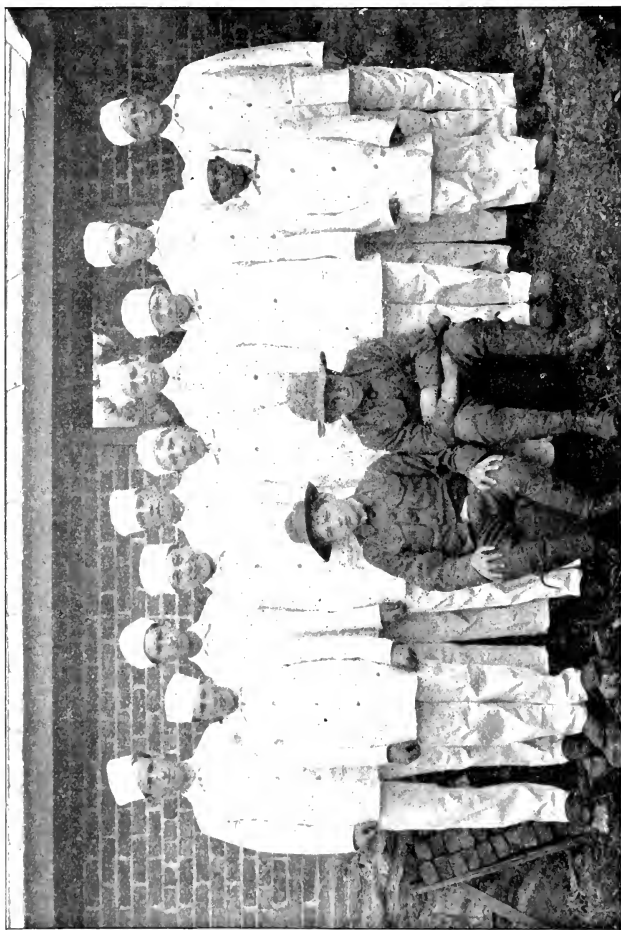


FIG. 110.—DAIRY SQUAD AT BERKSHIRE INDUSTRIAL FARM, CANAAN, N. Y.

3 feet wide and $7\frac{1}{2}$ inches long in the center of the stall where the horse stands. This is concrete underneath and plank on top. There is a watering trough connected with the water supply in one corner of the stable. There is also a feeding loft where all of the feeding is done, thus obviating the old difficulty of occasionally having a horse's eye put out by a careless boy with a fork. The roof is slate. This barn is built on the north side of the old hay barn in such a manner that the hay can be pitched directly into the feeding loft from the hay mow.

PIGGERY—The old piggery has been renovated by putting in hollow concrete walls, similar to those of the horse barn, on the east side and south end, and this building is given a grade from each direction to the center and this center grades from end to end into a concrete pit for collecting and saving the liquids. Concrete partitions 6 inches thick and 40 inches high; concrete troughs 4 inches deep, 12 inches wide and $7\frac{1}{2}$ feet long; this is the width of each pen, the length of same being 17 feet, 8 inches. There are eight of these pens. In the rear of each pen there is a 10-inch partition for sleeping quarters. Experience has proven that hogs will keep clean if thus arranged and bedding supplied. The entire front is a swinging door made of 2-inch chestnut plank and so constructed that it can be swung to the back of the trough so that the hogs cannot get into the trough until the feeder is ready for them; the front also swings high enough to allow the hogs to pass under and out at the will of the caretaker. There are ten single-sash windows, one-half of which slide up and down and the other half hinged at the bottom. The entire south end, except the door, above 4 feet is covered with muslin for ventilating purposes.

DAIRY—The new dairy is located 12 feet from the milking stable on a line with its north end. It is 26 feet by 22 feet, having four rooms below and two above; below there is a wash-room furnished with concrete wash sink 39 inches long, 18 inches wide and 12 inches deep, a rinse sink of the same size and a steam jet adjoining the rinse sink; also a concrete table for sterilizing purposes. In this room, under the stairs, is a closet for storing purifying compound, milk testing materials and other utensils used in the dairy, except the butter and milk utensils. Next to the stairs is a desk, by the side of which hangs a pair of milk scales. This room is furnished with hot and cold water and steam, all connected with the sewer. The sidewalls are like those of the horsebarn; the floor is of concrete, having a slope to the center where there is a bell trap connected with the sewer. The milk room contains the separator, churn, butter worker, butter scales, Babcock testing outfit, cream vat, milk cooler, bench and galvanized pipe rack for milk pails and cans. This room is also furnished with hot and cold water, steam and fifteen feet of steam hose for sterilizing floors, walls and ceiling.

Boys' Room—This room contains a wash sink 11 feet long, 16 inches wide and 6 inches deep, supplied with hot and cold water and steam, two shower heads for shower bath, toilet closet and ten steel lockers. The boiler room is fitted with an upright boiler of sufficient size to furnish hot water, steam and heat for the entire building. The loft is ceiled with Georgia pine, divided into two rooms, one of which will be occupied by the worker in charge and the other by two boys, one being in charge of the dairy and the other in charge of the boiler.

DAIRY BARN—The old horse barn and part of the old cow barn have had the partitions removed, throwing all into one room 73 feet by 36 feet. A

concrete floor has been laid throughout this room, the cows facing outward with commodious feeding alleys in front and concrete mangers and drops. The entrance door, being in a very cold place, has been made double to form a sort of storm house so that when one door is opened the other will be closed. The building has been fitted up with drop-lock steel stanchions, forty-two in number, also galvanized steel partitions and stanchion frames. The platform on which the cows stand is graduated in width from 4 feet, 8 inches down to 3 feet, 6 inches, so that the cow or heifer can be placed where the platform best suits her length. The old dairy barn has been converted into what is known as the "maternity ward," with box stalls for brood mares, cows, brood sows and growing calves.

GREENHOUSE—The new greenhouse is located between the new Sloane Laundry and the Sister Dora Cottage. It is 18 feet by 40 feet, having 30 feet of glass and a 10-foot room on the north end for bench work, seeds, heating plant and tools; the eaves at this end being 6 feet high, while those at the glass end are 38 inches high. The glass super-structure has been furnished by one of the best greenhouse manufacturers and will make a very substantial building, which will be an ornament to the institution.

LAUNDRY—The entire internal arrangement of the old guard house has been removed; a properly graded concrete floor with necessary sewer connections has been made and a complete modern laundry equipment installed.

WASH ROOM—The antiquated, unsanitary washroom equipment has been entirely removed and concrete wash sink having individual concrete basins has been installed, also a coil has been placed in the furnace in the steam boiler, which furnishes hot water for washing and bathing purposes.

SEPTIC TANKS—Two septic tanks have been built, one to care for the sewage from the dairy, 4 feet by 4 feet, 8 inches, having a disposal area under the onion bed; the other to care for the sewage from the new schoolhouse, which is 5 feet by 5 feet, 10 inches, having a disposal area in the garden. The latter was built entirely by the boys and is a credit to them. When the plumbing is installed in the new school building it will make possible the obliteration of the very unsightly, unsanitary and disagreeable closet near the gymnasium, heretofore used.

RAWLINGS BROOK WATER SYSTEM—A ditch 2300 feet long, varying in depth from 18 inches to 5 feet was dug in two and one-half days by three men, two teams and the boys. The pipe was laid by three men and the boys in nine hours. It was carefully graded by the use of a transit, thoroughly tamped underneath and then covered; a team and plow being used for this purpose.

METHODS AND CHANGES—After a very careful study of the situation I recommended the following methods and changes:

Dairy: That the most trusty boy on the farm be given charge of the dairy under the direction of the worker in charge; that he have an assistant known as assistant dairyman to take the place of the chief dairyman during his absence.

That another trusty boy have charge of the boiler who also has an assistant.

That six boys be known as milkers; two as apprentices; one as milkman and one as stableman.

That the engineer have charge of the separator, also of the washing of utensils, assisted by the assistant engineer.

That the chief dairyman be held responsible for the cleanliness and general work of the dairy, including the butter making under direction of the worker in charge. That the apprentices drive the cows to and from the pasture, wash them when they are stabled, and brush and clean them for milking; that the milkman collect the utensils from each department, deliver the milk and get receipts signed by each head of department, as required by the new business system.

That the stableman be responsible for the cleanliness and order of the dairy stable.

That the line of promotion be from apprentice to milkman to stableman to milker No. 6, and so on to milker No 1, to assistant dairyman and then to chief dairyman.

I have drilled this dairy squad, each in his various duties, and they have taken hold of the work with zeal and efficiency. When the cows are driven into the yard each milker stables and stanchions his own cows; he then goes to the boys' room, washes his hands and puts on a clean white suit, receives a narrow-top milk pail from the engineer, who gets it from the milk room rack. As soon as a cow is milked, the milker carries the milk to the wash-room, hangs it on the scales and washes his hands while the chief dairyman makes a record of the amount of milk and empties it into the separator, where it is separated by the engineer; he then takes his pail and milks the next cow. As soon as each milker completes his task he rinses the milk from his pail, sets it near the wash sink, and goes to his breakfast or supper as the case may be. As soon as the cream is separated it is placed in the cream vat and covered from flies, which are as carefully kept out as possible by having the windows and doors screened.

Dairy Stable: The boy known as stableman first removes manure from the floor and drops, then sprinkles sawdust over moist places on the floor, after which all is carefully swept into the drop and will then have, as soon as the material arrives, a few shovelfull of acid rock sprinkled in the drop. After thoroughly cleaning the stable and putting his tools in their proper places he cuts the pumpkins or roots for the evening feed for the cows and cleans up the approaches on the outside; he then reports to the dairyman in charge, who inspects the work, and if found properly done the stableman's work before school is finished. The boys, under the direction of the worker in charge, are held responsible for the cleanliness of the maternity ward, one for this and the other boy for the piggery; the former to be cleaned every day and the latter, two pens and the feeding alley each day.

Tool House: When the old dairy was vacated it was converted into a tool house and two boys, one in the morning and one in the afternoon, were placed in charge. A prize was offered to the boy who would bring in the greatest number of tools and clothing which were found out of place; one hour in the afternoon was given to this work and resulted in bringing in 257 articles, some of which had long been missed and much needed. Necessary tools that are used each day in any department were given a place in that department and when any tool is needed for special work the one getting it from the tool house is required to sign a receipt for it; this receipt is placed on a spindle and left there until the tool is returned and the slip destroyed, which must be before chapel in the evening or the receipt is brought as evidence of the delinquency. This plan has

worked very well and will doubtless save the institution a large amount of money.

Talks to the Boys: One evening was given up to the discussion of "How to Save Wastes on the Farm." Each boy was requested to send in a list of things that were being wasted and each suggestion made by the boys was thoroughly discussed. This evening I believe to have been one of the most profitable ones of all those spent with the boys. Several evenings were devoted to talks illustrated by stereopticon slides on the subject of poultry, dairy, horses, sanitation and concrete; some of these slides being kindly loaned by the State College of Agriculture at Cornell. The last evening spent with the boys was devoted to the subject of personal purity, and I trust this also will result in much good.

The following is a copy of Farm Extension Work report, the name of the owner being fictitious, showing sample of work and form of reporting:

STATE OF NEW YORK—DEPARTMENT OF AGRICULTURE
FARMERS' INSTITUTE BUREAU

FARM EXTENSION WORK REPORT.

Township.....Linwood.....County.....Livingston.
Name of Party.....John Doe.
P. O. Address.....Linwood, N. Y.
How farm is reached.....Linwood on D. L. & W. Mile from station.
Size of farm.....50 acres. Branch of farming.....Dairy, fruit, general.
Does farmer pay any part of expense, or furnish livery?.....Furnished livery and entertainment.
Date of visit.....May 10. Was farm previously visited? Yes; last fall.
Should farm be visited again?.....Not unless called for.
If so, about what time?
How long time was spent in giving advice.....Nearly six hours.
Give in detail description of problem and the advice given (If previous visit made give record of developments):

Tile drainage of four fields aggregating about 20 acres. The lower 300 feet of drain will have a fall of only $6\frac{3}{4}$ inches. Advised 5-inch tile and careful grading above same—fall of 14 inches per 100 feet. (Grade and depth of excavation given.) Plenty of fall for laterals—4-inch tile for remainder of drain, 3-inch tile for laterals. Depth of lower 300 feet, 2 feet 8 inches, which is as deep as I could get an outlet, remainder 3 feet deep. Second system—sub-main discharging into system 1, about 700 feet long with several laterals. Third system—a short, independent main—4 laterals about 1,000 feet each. Grade of last named, sufficient. Tile on the place ready to begin work next week.

Advice also given in regard to care, pruning and cultivation of young orchard of about five acres. Pruned sufficiently, but not sprayed. Bud moths and leaf-rollers in evidence. Advised spraying with lime-sulphur 1 to 40, arsenate 5 pounds to 100. Cultivation will be given.

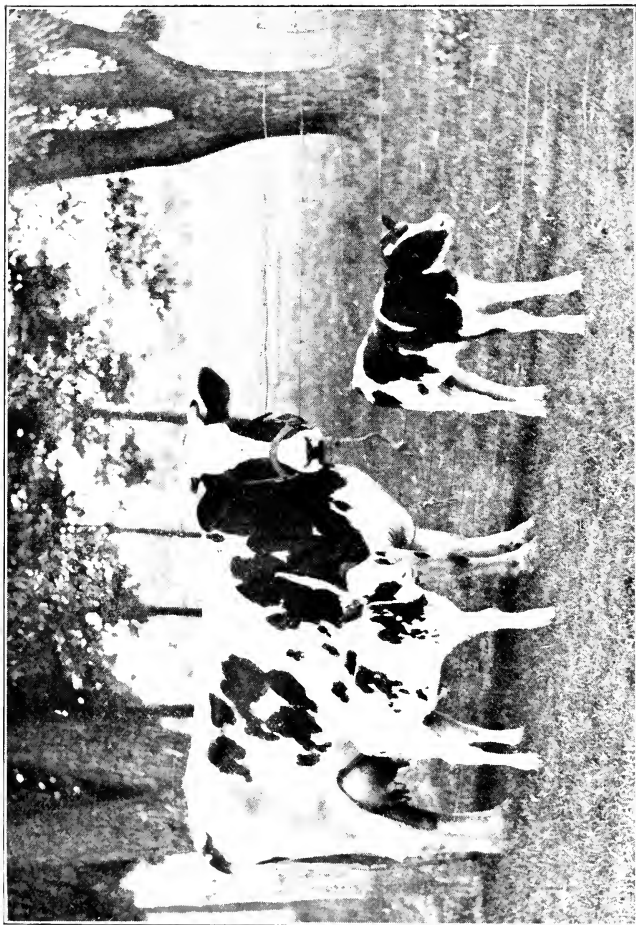
(Use other side of sheet in answering this question if necessary.)

Name of advisor, *F. E. Gott.*

COW TESTING ASSOCIATIONS

The work of forming cow testing associations was inaugurated by Commissioner R. A. Pearson, and the following associations now in operation were organized prior to January 1, 1913:

COUNTY AND ASSOCIATION	BEGAN WORK
CATTARAUGUS COUNTY	
Ischua Valley Cow Testing Association.....	Apr. 1, 1912
Number of dairies 20. Number of cows 448.	
CHAUTAUQUA COUNTY	
Conewango Valley Cow Testing Association (Falconer).....	Apr. 1, 1911
Number of dairies 31. Number of cows 494.	
Note.—Reorganized March 26, 1913, as Carroll Cow Testing Association.	
DELAWARE COUNTY	
Bovina Cow Testing Association.....	May 1, 1911
Number of dairies 22. Number of cows 675.	
Cannonsville and Deposit Cow Testing Association.....	Apr. 1, 1911
Number of dairies 20. Number of cows 700.	
Delhi Cow Testing Association.....	Apr. 1, 1910
Number of dairies 26. Number of cows 780.	
Roxbury Cow Testing Association.....	Nov. 1, 1912
Number of dairies 18. Number of cows 588.	
JEFFERSON COUNTY	
Jefferson County No. 1 Cow Testing Association.....	Apr. 17, 1912
Number of dairies 25. Number of cows 575.	
ONEIDA COUNTY	
Sangerfield County Club Cow Testing Association.....	Dec. 15, 1912
Number of dairies 18. Number of cows 361.	
OTSEGO COUNTY	
Mt. Vision Cow Testing Association.....	Nov. 1, 1912
Number of dairies 32. Number of cows 580.	
TOMPKINS COUNTY	
Ithaca Cow Testing Association.....	May 1, 1908
Number of dairies 26. Number of cows 219.	
WASHINGTON COUNTY	
Putnam Cow Testing Association.....	May 1, 1912
Number of dairies 30. Number of cows 540.	



This work had been done in the main by members of the corps of institute workers, notably Mr. A. J. Nicoll, but it was not directly under the charge of the Director of Farmers' Institutes until January 1, 1913.

In all dairy sections the value of the cow testing association was brought before the people by lectures and discussions at the institutes. In many cases sufficient names were taken at such meetings to form an association. These were not followed up as closely as was desirable because the men able to do it were employed in the institute work. As soon as the regular season this year was over, the workers visited these places and ten associations were organized.

In counties where farm bureaus were in operation we find this work comparatively easy as much of it can be done and well done with the assistance of the bureau agents. The following is a list of the associations organized from January 1, 1913, to June 14, 1913:

COUNTY AND ASSOCIATION	BEGAN WORK
CHAUTAUQUA COUNTY	
Chautauqua Lake Cow Testing Association.....	June 1, 1913
Number of dairies 21. Number of cows 440.	
Conewango Valley Cow Testing Association.....	Apr. 10, 1913
Number of dairies 11. Number of cows 300.	
Sinclairville Cow Testing Association.....	Apr. 1, 1913
Number of dairies 32. Number of cows 524.	
ERIE COUNTY	
Boston Valley Cow Testing Association.....	Feb. 15, 1913
Number of dairies 11. Number of cows 108.	
JEFFERSON COUNTY	
Antwerp Cow Testing Association.....	Apr. 15, 1913
Number of dairies 23. Number of cows 500.	
Smithville Cow Testing Association.....	May 14, 1913
Number of dairies 20. Number of cows 350.	
ONEIDA COUNTY	
Knoxboro Cow Testing Association.....	May 3, 1913
Number of dairies 30. Number of cows 573.	
Westernville Cow Testing Association.....	Apr. 15, 1913
Number of dairies 15. Number of cows 300.	
OTSEGO COUNTY	
Butternut Valley Cow Testing Association (Gilbertsville)....	Mar. 1, 1913
Number dairies 18. Number of cows 347.	

COUNTY AND ASSOCIATION

BEGAN WORK

WASHINGTON COUNTY

Hartford-Hebron Cow Testing Association..... Apr. 24, 1913
 Number of dairies 21. Number of cows 325.

WYOMING COUNTY

Perry Cow Testing Association..... June 1, 1913
 Number of dairies 25. Number of cows 360.

In addition to these there are several localities where associations can be organized a little later in the season when farmers have more leisure.

The total number of associations now working in the state is 22, and the total number of cows under test 10,087.

Some associations unfortunately have gone out of existence. This has been largely due to lack of oversight. Realizing this deficiency, the Department is endeavoring to keep in close touch with the different organizations in order to render them any help that they may need during critical periods, and is using every effort to see that they are supplied with testers fully qualified to do the work. Farm bureau agents are exercising such supervision in counties where they exist. In not a few instances in the different associations there are owners of herds who are taking up the advanced registry work. These we believe will increase and the opportunity of doing such work through the associations will materially assist in the number of men who will enter their cattle for such tests.

Through the institutes, farmers have been urged to keep individual records. As a result of this the Department during the period covered by this report, has furnished over two hundred farmers with necessary blanks for keeping such records.

SOME RESULTS OF COW TESTING WORK

A. J. NICOLL,

Farmers' Institute Lecturer

The average production of milk and butter fat of the cows of New York State is so low that after the cost of production is deducted, no profit is left for the owner. The dairy farmer works as long hours and renders as faithful service as men engaged in any other business and is entitled to a reasonable compensation for his work.

In order to have this, he must either increase the production of milk and butter fat of his cows or the price at which the product is sold. The selling price, although often fixed by the party to whom the product is sold, is largely controlled by the great law of "supply and demand." Many dairymen forget that the easiest way to increase the profit from the herd is to lower the cost of production by increasing the quantity of milk and butter fat produced by the individual cow. In order to do this the dairymen should know the yearly production in milk and fat of each cow in the herd. Since very few farmers are keeping records of their cows, the Department has been organizing cow testing associations in which a competent man is employed to keep a record of the herd.

In order to form a cow testing association, the dairymen of a neighborhood meet and organize by the election of the president, vice-president, secretary, treasurer and two directors. The officers then engage a man to act as official tester and take charge of the work of the association. The Department lends its aid in organizing associations and securing testers to take charge of them, and will supply all blanks needed. The Department has supervision of the work of all associations in the state. The testers are receiving from \$40 to \$50 per month and board, according to the size of the association.

Twenty dairies with 712 cows were selected at random from the Delhi and Bovina Associations in Delaware county and the following data made to demonstrate the possibility of improving the herds of the state by careful selection and breeding.

The records show that as there was an increase in the production of butter fat by the selection of the best ten and the best cow, there was a like increase in the milk production. The average production per cow of the best ten cows in each herd was an increase of 884 pounds of milk and 90 pounds of fat over the average of the entire herds. The selection of the best cow in each herd brought this average up still more—1,182 pounds milk and 50 pounds of fat, or 2,066 pounds more milk and 140 pounds more fat than the average production of the herds. If the twenty herds had been as good as the best ten cows in each herd, the profit over feed would have been increased \$19,402 for the year or \$27.25 per cow. Could the herds be brought to equal the best

cow in each herd, the profit over feed would be \$33,777.28 more than the return of the entire herds. This would more than double the profit.

If the twenty herds were composed of cows as good and as well fed and cared for as the best five cows, the profits, after paying for feed, would be \$48,786.24 more than the profits of the entire herds, or an increase of \$68.52 per cow; more than two and one-half times the average production of the herds.

In the associations from which these records are taken, hay is charged at \$10 per ton in the barn, and pasture at thirty cents per week per cow. Grain is charged at the actual price paid by the owner. All herds are charged the same price for roughage and pasture.

	AVERAGE PER COW					Profit over feed, 20 herds, 712 cows
	Milk	Fat	Value	Cost of feed	Profit over feed	
HERD No. 1						
Thirty-five cows.....	4,732	258.8	\$94 64	\$46 36	\$48 28	} \$1,689 80
Best ten.....	7,365	365.9	147 20	58 51	88 69	
Best cow.....	8,977	415.5	179 50	68 31	111 19	
HERD No. 2						
Forty-one cows.....	4,584	224.	87 45	35 50	51 95	} 1,829 82
Best ten.....	6,218	297.9	117 80	43 69	74 11	
Best cow.....	5,948	342.	138 10	47 22	90 88	
HERD No. 3						
Twenty-nine cows....	3,911	183.7	76 99	41 03	35 96	} 1,123 66
Best ten.....	5,453	256.2	108 16	48 16	59 99	
Best cow.....	5,690	281.2	115 71	48 44	67 27	
HERD No. 4						
Twenty-nine cows....	4,141	195.96	72 85	35 68	37 17	} 1,073 89
Best ten.....	5,173	249.6	93 74	41 83	51 91	
Best cow.....	7,218	268.6	105 81	46 42	59 39	
HERD No. 5						
Forty-six cows.....	4,196	198.46	76 17	39 32	36 85	} 1,695 17
Best ten.....	6,841	324.9	126 25	56 66	69 59	
Best cow.....	8,627	388.5	147 19	56 65	90 54	
HERD No. 6						
Thirty-eight cows....	5,393	201.79	80 19	42 96	37 23	} 1,414 69
Best ten.....	7,278	273.6	109 36	51 19	57 17	
Best cow.....	9,737	353.7	140 87	55 89	84 98	
HERD No. 7						
Twenty-nine cows....	4,268	202.55	73 01	31 34	41 67	} 1,208 12
Best ten.....	5,146	236.	92 73	36 28	56 45	
Best cow.....	6,414	290.19	110 93	36 69	74 24	
HERD No. 8						
Twenty-nine cows....	4,843	237.60	88 45	36 21	52 24	} 1,525 09
Best ten.....	6,096	288.07	109 52	45 35	64 17	
Best cow.....	6,755	324.61	125 57	46 60	78 97	
HERD No. 9						
Fifty-one cows.....	4,478	219.4	87 20	40 02	47 18	} 2,406 19
Best ten.....	6,859	323.04	129 33	49 59	79 74	
Best cow.....	7,523	367.7	150 76	56 34	94 42	
HERD No. 10						
Thirty-nine cows....	4,905	238.99	91 17	35 62	55 55	} 2,172 51
Best ten.....	7,301	361.72	133 22	45 98	87 24	
Best cow.....	8,920	415.16	163 42	50 40	113 02	

	AVERAGE PER COW					Profit over feed, 20 herds, 712 cows
	Milk	Fat	Value	Cost of feed	Profit over feed	
HERD No. 11						
Thirty-nine cows.....	3,766	184.86	\$67 67	\$39 09	\$34 56	} \$1,358 86
Best ten.....	4,852	214.17	92 16	42 28	49 88	
Best cow.....	5,679	285.08	105 52	40 68	64 84	
HERD No. 12						
Forty-six cows.....	3,277	151.	56 93	27 79	29 14	} 1,340 29
Best ten.....	6,311	286.94	110 46	44 90	65 56	
Best cow.....	8,029	333.05	133 88	51 91	81 97	
HERD No. 13						
Thirty-eight cows....	4,451	222.66	82 91	36 74	46 17	} 1,754 45
Best ten.....	6,092	314.71	116 57	45 37	71 20	
Best cow.....	7,065	358.58	132 04	45 63	86 41	
HERD No. 14						
Thirty-two cows.....	5,223	240.73	93 75	40 46	53 29	} 1,705 31
Best ten.....	6,747	329.33	129 87	49 62	80 25	
Best cow.....	7,375	413.83	170 49	50 90	119 59	
HERD No. 15						
Twenty-five cows....	3,759	148.51	63 72	30 24	33 48	} 837 67
Best ten.....	5,452	216.77	97 64	39 15	57 49	
Best cow.....	8,312	288.62	146 15	48 16	97 99	
HERD No. 16						
Thirty-three cows....	4,479	211.80	87 67	38 89	48 78	} 1,609 74
Best ten.....	6,599	307.17	128 93	49 54	79 39	
Best cow.....	9,000	379.05	156 86	52 97	103 89	
HERD No. 17						
Thirty-five cows.....	4,609	208.81	81 71	35 03	46 68	} 1,633 68
Best ten.....	6,642	287.46	113 38	44 23	69 15	
Best cow.....	5,156	306.16	119 69	38 35	81 34	
HERD No. 18						
Twenty-six cows.....	4,298	221.87	91 64	36 19	55 45	} 1,441 66
Best ten.....	6,216	312.93	130 10	47 19	82 91	
Best cow.....	8,137	385.36	158 79	49 18	109 61	
HERD No. 19						
Thirty-two cows.....	5,330	249.50	104 42	39 81	64 61	} 2,067 44
Best ten.....	6,945	338.21	141 94	47 62	94 32	
Best cow.....	8,080	371.82	158 17	51 03	107 14	
HERD No. 20						
Forty cows.....	3,533	164.66	67 18	26 55	40 63	} 1,625 14
Best ten.....	5,488	265.88	108 37	36 03	72 33	
Best cow.....	6,169	310.77	127 48	40 40	87 08	

TOTAL PRODUCTION

	Milk	Fat	Value	Profit over feed
Twenty herds, 712 cows . . .	3,128,575	145,711	\$57,678 67	\$30,585 18
Average	4,374	204.6	81 00	42 94
200 cows, best ten in each herd	1,251,724	58,802	23,368 19	14,034 74
Average	6,258	294	116 84	70 19
Twenty cows, best cow in each herd	148,810	6,880	2,786 93	1,807 76
Average	7,440	344.4	139 34	90 38
Average, best five cows	8,481.6	401.87	165 81	111 46

NET INCOME OF DAIRY 10 AND DAIRY 15

ENTIRE DAIRY BEST TEN COWS AND BEST COW

	TOTAL FOR YEAR		TOTAL BEST TEN COWS		BEST COW	
	DAIRY 10	DAIRY 15	DAIRY 10	DAIRY 15	DAIRY 10	DAIRY 15
	39 cows	25 cows	Best 10	Best 10		
Pounds milk	191,314	92,993	73,017	54,525	8,920	8,312
Average	4,905	3,719	7,301	5,452	.....	.....
Pounds fat	9,320	3,712	3,617	2,167	415	288
Average	239	148	361	216	.....	.....
Value of product	\$3,565 64	\$1,593 78	\$1,332 22	\$976 40	\$163 40	\$146 15
Average	91 43	63 75	133 22	97 64	.....	.....
Profit over feed	2,172 51	837 67	872 40	574 86	113 02	97 99
Average	55 60	33 50	87 24	57 48	.....	.....

TOTAL AND AVERAGE PRODUCTION OF POOREST TWENTY-NINE IN HERD 10, AND POOREST FIFTEEN IN HERD 15

	Milk	Fat	Value	Profit over feed
Poorest twenty-nine in herd 10 .	118,297	5,703	\$2,233 42	\$1,300 11
Average	4,079	196	77 01	44 83
Poorest fifteen in herd 15	38,468	1,545	617 38	262 81
Average	2,364	103	41 15	17 52

ADDRESSES AT FARMERS' INSTITUTES

8

THE GOSPEL OF THE FARMERS' INSTITUTE WORK*

JARED VAN WAGENEN, JR.

Our Director is nothing if not ecclesiastical and since he has given me an ecclesiastical topic, I presume it is to be treated in an ecclesiastical way.

So in good preacher fashion I may address you as "My dear hearers" and may tell you that my discourse arranges itself under four heads—to wit, The Work, The Man, his Message and his People.

The first is the institute work itself. Hear then a parable from the book of Jonah. You will remember—some of you anyway—how Jonah after many adventures came at last into Nineveh and entered a day's journey into the city and lifted up his voice and cried against it saying: "Yet forty days and Nineveh shall be destroyed." And you will remember again how he went out of the city to the eastward and built him a booth there and sat down under the shade of it and watched the city to see it pass away. And after he had looked a great while and beheld the city was not consumed, he was exceedingly wroth with himself and with the Lord and said: "Did I not prophesy against this city and said I not even thus and so against it while I was yet in my own country." Then the Lord said, "Shall I destroy this great Nineveh wherein are more than six score-thousand persons who discern not their right hand from their left hand and also much cattle."

And Jonah after all was not so different in his viewpoint and his philosophy from men in our time because they have watched the institute work and have said: "Yet a year or two years perchance and it will surely die"—and they have possibly been filled with indignation at the law-makers who have let it live. It is the fashion in some quarters to speak condescendingly of the work as a movement which has lost its value—as something which possibly had a place a generation ago but not now—a sort of vesti-

* Address delivered at Ithaca, N. Y., March, 1913, at Conference and Dinner of Institute Workers.

gial or residual survival of earlier conditions — or if you want a strictly up-to-date metaphor — it is now only the veriform appendage of agricultural extension work, useless at the best and likely at any moment to cause trouble.

It is spoken of as a creed outworn that must now give place to colleges, secondary schools, extension schools, traveling libraries and bulletins scientifically written and regularly mailed; and above all, pedigogically arranged.

I tell you *Nay* — for this splendid College of Agriculture which no man is more eager to honor than I, is after all the heritage of the farmer who is already able, successful and strong, and the same is true of the intellectual appeal made by the secondary schools. Unfortunately many worthy men have never received that amount of training which leads them to look naturally and easily to the printed page for instruction.

I grant that nothing is proclaimed in the institute that has not been said before — and better said perhaps in books and bulletins — yet always the world has recognized that there was something in the human voice that was not in the printed page and always this doctrine has been applied in those affairs of life where the endeavor was either to teach or to persuade men. So another parable I declare unto you, “How shall they believe in whom they have not heard and how shall they hear without a preacher and how shall they preach unless they are sent.”

One thing about the institute work that all of you must have thought of and wondered at is this — how little it has changed with the years in mode of operation. It was stated, be it remembered, by men who were untrained in the schools, who made no pretense to knowledge of pedagogical methods, who had no models by which to mould it — yet wonderful to tell, from the very beginning it fell into almost the exact form in which we find it today. In the winter of 1888, a very happy student boy, I sat in the gallery of Library Hall and looked down on an institute with Woodward, Curtis and Powell in command, that in audience, in method and in spirit was very similar to the one that I attended yesterday.

I have never believed for a moment that the importance of the institute work was to be compared to the College of Agriculture or some other agencies that I might mention. I have never flattered myself that its teachings had either the breadth or exactness of the more pretentious extension schools. I have always been glad to recognize the need of improvement in scope and plan, if not in method, but I say now and I am wondering how generally you will agree with me, that the institute as now carried on, with brief addresses which shall carry inspiration quite as much as information, is the most efficient means yet devised of reaching the untrained farmer. I believe the results attained have been large in proportion to the money expended and I do not see any reason why the work may not continue practically in its present general form for many years.

Now to pass to secondly. If there is to be the teaching of man to man, then there must be the human mouth-piece. Listen then, "This is a true saying, if a man desireth the office of a Bishop, he desireth a good work. A bishop, then, must be blameless, the husband of one wife, vigilant, sober, of good behavior, given to hospitality, apt to teach. Not given to wine, no striker, not greedy of filthy lucre, but patient, not a brawler, not covetous."

The man who desireth to be an institute worker also desireth a good work and all these things must he be. One idea has always pleased my fancy and possibly appealed to my vanity; namely, that wherever you find the institute man who has proved himself and has made good, almost without exception you find a man of worth and character — one who, to quote a phrase of our old-time Director Smith, is "a man of great probity." It is more than a circumstance that this is so. No institute director has insisted on adherence to any creed or a certificate of character. At most they have asked only for the "outward decency" which Mayor Gaynor says is what he has asked of the policemen of New York. Always the ostensible purpose has been to teach agriculture rather than morals, yet the result has been the progressive and almost unconscious elimination of the unworthy man. I do not attempt to explain this, I only know it is so. There would seem to be something about the work that very quietly but very surely shakes out of it the

man who is not at heart a gentleman, and I say here with feeling and sincerity that in this state and other states, the men whom I admire; the men whose friendship I covet and the men whom I would turn to in time of trouble, belong largely to the brotherhood of instituters.

And thirdly — the message. “Behold the voice of one crying in the wilderness.” I presume that in all the world there is nothing that thrills our heart or quickens our imagination as does the figure of a man with a message — a man in whose heart there is some ideal in which he believes so earnestly and sincerely he can never be content until he has passed it on to others. And I fear all of us have come far short of this ideal. I am afraid we have imagined we were delivering a message when after all we were merely making a talk and waiting for the closing hour, but I want to remind you that the man with a message is quite as likely to be found out in the hill-country as in the town. He may do his work quite as well in — say Barnes Corners — as in Ithaca. The finest figure as a preacher in all history is not the High Priest celebrating the stately service of his faith in the temple at Jerusalem, but it is John with his mantle of camel’s hair and leathern girdle about his loins crying in the desert country beyond Jordan. It is not the great Bishop of the Church intoning in the dim choir of his cathedral, but it is the circuit rider with his saddle bags behind him — Zion’s weather beaten scout on the pioneer fringe of civilization.

Last winter up in one of the narrow mountain valleys of my own Schoharie County, I heard an old time Baptist elder opening the institute with prayer, who struck the keynote of this whole work when he said, “Oh Lord, thou knowest that we all ought to be better men and farmers.” If all of us could come to believe that most mightily, we might come nearer to being real agricultural preachers than we are.

And then another truth is this — that with the years, the message of the institute is constantly a broader one. Twenty-five years ago I was a student in this College of Agriculture, then domiciled on one side of one corridor in Morrill Hall. Some of you very recent graduates may not believe it, but even then there

was some excellent advice on the growing of wheat and the fattening of hogs, but there was not one whisper about what we have since learned to call "rural sociology." I do not think the word was in our vocabulary. Since then we have come to know and to boldly say that it is at least as important to improve the breed of men as the breed of cattle.

I say with enthusiasm because I believe it so thoroughly; I say with pleasure because I know it is so exactly the belief of our Director — that while the message of the institute may be primarily one of better crops, it ought not to stop there. I am sure that it concerns itself not only with corn and cattle, but that it ought to touch the problems of the home, the school, the community and the church — in a word everything which has to do with rural civilization. Only last week I heard reiterated again that old-time inquiry of Horace Bushnell as to the "price of real estate in Sodom," and I insist that while the institute will never ask adherence to any creed or make any tests of faith, still the institute that does not leave men with the upward look and the conviction that man does not live by bread alone, has stopped short of its privileges.

Fourth and lastly is the field or the people; and to my mind the greatest call for the institute work is expressed in the commission, "Go rather to the lost sheep of the house of Israel," and translated into our modern terms of life it means that the appeal of the institute is primarily made — not to the successful and able farmer but rather to the man who has not yet found himself. I take it that the educational duty of the state concerns itself not so much with the man living, for example, on the exceedingly valuable lands of eastern Long Island or whose happy fortune it is to be born amid the bending orchards of the Ontario shore, but the call of the time is rather to the hill farmer striving for an existence amid the poverty grass of his barren hilltop or the tenant farmer on the last farm. And I want to say this to you, that the very existence of the rural community depends upon his salvation. In every large neighborhood there is room for the man at the top and the man at the bottom and each may live his own life careless

of the other, but you can not do things that way in the open country — for we must stand or fall together, and it helps very little that one or two farmers in a community should be strong and successful if their neighbors fail in the race. In the open country, as nowhere else, it is true that we “live not unto ourselves, and no man dieth to himself.” Well spoke the Hebrew seer that “where there is no vision the people perish,” and the call comes to every man who would be a teacher of farmers to catch the whole vision of our agricultural times and to look toward the sunrise.

LAND DRAINAGE IN NEW YORK

ELMER O. FIPPIN

Professor of Soil Technology, Cornell University, Ithaca, N. Y.

The necessity for reasonable drainage of the soil for the production of nearly all of the common farm and garden crops is recognized by all persons connected with agriculture. Farmers generally know that a saturated condition of the soil is unfavorable for the growth of the staple plants. As to what constitutes reasonable drainage of the soil there is much difference of opinion. This fact is especially evident when one studies the farm land of the state in the light of the results of modern investigation into the causes of soil fertility.

To the mind of some persons land is well drained if its surface has a good slope. Land, on the surface of which water does not stand during most of the crop season, may seem well drained. Continued saturation during the winter or protracted periods of subsoil saturation in the summer does not seem particularly objectionable to such minds.

On the other hand the fact is that land which is intermittently wet for two or three days at a time is the cause of much greater loss to the farmer than occurs on land which is flooded the year round and is commonly known as swampy. Such land is let alone and not used for farming purposes until it is at least partly drained. On the other class of land — that which is intermittently wet — any attempt that is made to use it for tilled crops, entails a loss of labor, seed and fertilizers which cuts deeply into profits.

EXTENT OF SWAMP LAND IN NEW YORK

There are about twenty-five hundred square miles of swamp land in New York. This is distributed in many scattered small and large areas found in nearly every part of the state. Some of it is tidal salt marsh around New York and on Long Island but the greater part is upstate. Of this area about eight hundred square miles is composed of muck soil, and it is in this

kind of land in particular that financial interests are concerned. Nearly all the soil in areas not classed as muck is dark in color due to the accumulation of organic matter, and will usually produce good crops when drained.

LAND THAT IS PERIODICALLY WET

The real agricultural drainage problem, however, has to do with those large areas of land that are now used for farming purposes but which are too wet to give good crop yields. It is the land that is springy and seepy, the land where fruit trees are missing, singly or in blocks, the land where the corn is weak and patchy, where the wheat freezes out and the grass is supplanted by plantain in large, blotchy areas. A large part of the tilled area of the state falls within this class in that it needs more or less drainage. A careful study of soil types in several counties shows the proportion of such land to range from 43 per cent. in Dutchess County to nearly 60 per cent. in Niagara County and over 80 per cent. in Livingston County. We would not be understood to say that all this area needs systematic drainage, but rather that a considerable amount of drainage is needed to prevent needless waste and increase net returns.

SOME TYPES OF WET LAND

Flat clay land generally needs systematic drainage. Such land occurs in the large areas in the central part of the state along lakes Erie and Ontario, in the St. Lawrence Valley and in the Champlain and upper part of the Hudson Valley as far south as Newburgh. Drainage of such soil is needed because its fine texture causes water to circulate very slowly. It is likely to be retained so long that the productive capacity of the soil is reduced.

In the same regions where the clay soils occur, there are many other soil conditions that may be wet. There are terraces of gravelly and sandy loam that are often wet along the base due to the water that has percolated down from the top soil, being brought out to the surface by some impervious substratum. There may be the outcrop of some porous strata through which the water moves freely. On the hillside this produces a seepage line or zone of wet soil.

There are large, rounded hills of stony loam soil that often contain wet areas. Their structure consists of glacial till interstratified with layers and pockets of gravel and sand in which water accumulates. The drumlin-shaped hills typically developed in Wayne County are of this sort. Springs and wet areas are of frequent occurrence.

Some of the most misleading soil in reference to wetness is found in the hill lands of southern New York. Much of that land has a good slope and sometimes it is almost precipitous. The slope would seem to insure good drainage but the structure of the soil is such that good drainage does not exist. Much of the land has a moderately porous soil underlain by an impervious or hardpan subsoil. The rainfall is absorbed into this loose topsoil and trapped by the subsoil so that it is removed only by slow percolation and by evaporation. In addition springs are of common occurrence and spread down the slope in the form of a fan of wet soil.

Many other special types of wet soil occur but the above covers those that are most frequently met. Indications of wet soil are "heaving" in winter, failure of seed to germinate, bare patches or missing trees, pale green leaves, slow and stunted growth of crops and either a black or a pale, washed-out mottled color of the soil. Also the tendency to puddle and become lumpy under tillage are further evidences of wetness.

EFFECTS OF DRAINAGE

The reasons for the importance of thorough drainage will be better understood after a consideration of the far-reaching effects of drainage upon nearly all the factors of soil fertility.

1. The first effect of drainage is to remove the excess of water from the pores in the soil and replace it with air. This means better soil ventilation. Ventilation is as essential for the roots of most plants as it is for animals. Cut off their air supply by submersion or other means and the roots of plants soon die. Intermittent wetness does exactly this. There is a repeated pruning of the small roots as the soil changes from a dry to a prolonged wet condition. By producing deeper drainage and better ventilation, artificial drainage promotes deeper penetration of the roots of plants.

2. The tilth of the soil is improved and less cultivation is required to get the soil in condition for a crop. Drainage is the first requisite for good tilth and the efficient use of tillage implements. Not only can the land be worked sooner after each rain but it can be worked more days in the year. Consequently a less equipment of tools, teams and men is required to handle a given area of well drained than of wet land. The waste of energy and returns is especially large where there are wet spots. All the soil is never in condition to work at the same time and the crop does not ripen evenly. These conditions entail increased cost and reduced returns.

3. Drainage does not remove any water which would be beneficial if it remained. It removes the static water. On the other hand the improvement of the tilth of the soil and the deeper penetration of plant-roots make a larger amount of film water available to the crop. On drained land crops usually stand dry weather better than on intermittently wet land. Go into the corn field in August after a dry spell and one can pick out the wet spots by the curled leaves.

Near the surface of the soil the fluctuation in the moisture content is greatest. Deep in the soil the supply is more uniform. Consequently the deeper crop roots can maintain themselves the more uniform is their water supply likely to be.

4. Drainage results in a higher average temperature of the soil and in a quicker warming in the spring. The difference in warmth between sand and clay soil is due to their different capacities to hold water. Either kind of soil is cold and late when saturated with water. A low temperature hinders the starting of seed and growth. A drained soil may be eight or ten degrees warmer than the same soil undrained.

5. The supply of available plant-food is increased by the better ventilation, higher temperature, deeper root penetration, better tilth, better moisture supply, and the more active and favorable bacterial growth in the soil, all of which conditions result from improved drainage of a wet soil. The organisms that cause the decay of roots and manure and those that use the free nitrogen of the air are particularly affected in a beneficial way. All these

benefits help to reduce the need for commercial fertilizers, thereby affecting a material saving to the farmer, which saving goes on from year to year.

6. The winter "heaving" of plants is largely prevented by drainage. "Heaving" is due to the freezing of water in a saturated soil. Water in freezing must expand and since in the process it can not expand in any other direction it is manifested in lifting the surface. It carries small plants with it. When the ground thaws the soil falls back around the roots. Each time the freezing is repeated, the "heaving" is increased, and on wet land in some seasons tap roots like clover may be raised to the extent of twelve or fifteen inches, and literally spewed out of the soil and left on the surface to dry up. All winter crops are particularly subject to this type of injury which is frequently called "winter-killing." Wetness is its cause and drainage the remedy.

PURPOSE OF DRAINAGE

The object of drainage is to quickly remove from the root-zone of the soil the excess of water above that which may be retained in thin films on the soil particles and commonly known as capillary water. Any sort of a channel which accomplishes this purpose is effective and many methods of drainage may be employed. Some are less efficient and permanent than others.

OBJECTION TO SURFACE DITCHES

Surface ditches and canals are used where temporary results are desired, or where a large volume of water must be moved. For agricultural purposes the common surface ditches or furrows are of low efficiency and very expensive. They do not remove the water from a sufficient depth of soil, their grade is usually poor and the water flows slowly or not at all, or if it flows rapidly cutting results. The earth thrown out in forming the ditch hinders the entrance and removal of water; the ditch obstructs the surface, interferes with tillage and harvesting operations and harbors weeds. Further, such ditches must be renewed from year to year, all of which make them more expensive over a period of years than covered drains.

DIFFERENT METHODS OF CONSTRUCTING COVERED DRAINS

Poles, brush and stone have been used in constructing covered drains and have done good service in affording drainage. Their use was much more permissible in former years than at present when a good quality of drain tile can be had in most sections of the country. All those materials have the disadvantage of short life and often high cost for construction. If stones are used they had best be arranged without any definite throat. The ditch should be relatively large. The stones should be dumped in promiscuously except that the small, flat stone should be on the top and bottom. The water finds its way through the large spaces and the small stone on top reduce the danger of clogging. Flat stone may be arranged face to face with the flat sides parallel to the walls of the ditch. The top should be covered with small, flat stone.

TILE DRAINS; THE BEST QUALITY OF TILE

The preeminent material for modern land drainage is tile. They come in different shapes and of different quality. By a process of evolution we have come to prefer round or hexagonal shaped tile because they are easiest to lay and least likely to clog. They may be made of burned clay or of concrete. Clay tile may be either vitrified or unvitified. The former is most durable because its walls are least porous. The difference lies in the quality of clay used and the degree of heat applied in burning. Vitrification means partial melting of the clay particles which run together in a very dense mass. A low degree of porosity coincident with a moderate degree of vitrification is especially desired where the tile is likely to freeze. In the soil the pores in the tile become filled with water and if it freezes in this condition the walls of the tile may be fractured and broken up into scales. If only one or two tile in a long line are thus destroyed the service of the drain is jeopardized. Since vitrified tile cost no more on the average than soft tile, there is no excuse for taking the risk in using the soft tile.

The drainage efficiency of the tile is not affected by the difference in the porosity of the walls since the water enters at the joints.

Cement tile that are of fairly good quality may be made by hand or in machines. It is doubtful if they can be made as durable as

the best clay tile. They should be carefully made of a rich mixture. A sand a little loamy improves the quality if the mixing is thorough, as it reduces the amount of pore space. Whether they can be made at prices to compete with clay tile depends on the size made and the local situation in labor and materials for the two kinds of tile.

Only sound tile giving a true ring should be put in the ground. The ends should be reasonably square and smooth so that a good joint can be made. This is most important when laying tile in soil of a quicksand nature. Here special precautions against clogging is necessary.

PROTECTION OF JOINTS

The upper half of the joint should either be very close or should be covered with a strip of tar paper or burlap or a handful of thick cement mortar. This will force the water to enter from the under side of the joint. In heavy clay soil a very close joint is not desirable and openings up to an eighth of an inch are permissible, especially if the upper part of the joint is protected, as indicated above. Collars and bell-shaped ends like sewer tile are not necessary, although the latter may be serviceable in soil inclined to afford a soft bottom on which the tile rest. Such construction will protect the alignment.

ARRANGEMENT OF DRAINS

The arrangement of the drains will, of course, always depend upon the structure of the soil and the slope of the land which determine the direction of movement of the water. The aim should be to intercept the flow of the water and remove it from the land by the shortest practicable course.

On flat land the drains must generally be arranged in more or less parallel lines at such intervals as will accommodate the soil. Their purpose is to remove the water derived from rainfall upon that area. In clay land they may be from forty to sixty feet apart for the common field crops. On sandy soil that is moderately porous they may be from eighty to one hundred and fifty feet apart. For intensive cultivation, as in growing truck crops, a greater frequency may be justified. Where the surface is undulating and where there are strata more porous than others so that

the surface or the underground water is concentrated, the drain should be located only after careful study to determine the way in which the water moves. Much land that is undulating is particularly wet only in the low places and a line or two of tile through these will suffice. Sometimes surface water from hill sides accumulates at the foot of the slope and spreads out over the low land.

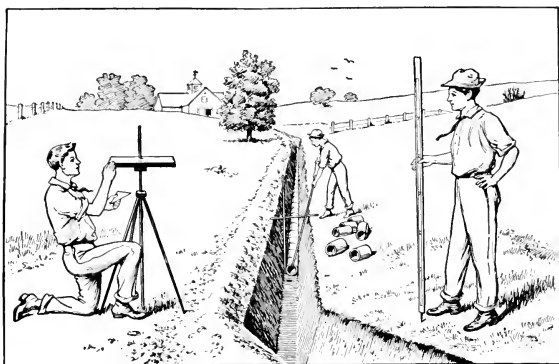


FIG. 111. SURVEYING FOR A LINE OF DRAIN TILE WITH A HOME-MADE LEVEL

In that case there should be a drain near the foot of the slope. If there is seepage from the hillside the drain should be cut near the upper edge of the wet soil and should be deep enough if possible to let the tile be laid on the impervious substratum and thereby intercept the flow. Whether the drains shall be laid across the slope or down the slope depends much on the local conditions. In many cases an arrangement diagonally across the slope at a high angle is best as it combines many of the advantages of both the other arrangements.

Clearly defined springs should be topped by the most direct route. If the water seeps out of a considerable area around the spring, Y-shaped spur drains may be helpful.

DEPTH OF DRAINS

The depth of drains will range from about twenty inches up to three and a half or four feet. The most common depth is from

two to three feet. In sandy land the drains may be placed deeper than in clay land. Up to a depth of four feet an increase in the depth of the drain will permit an increase in the interval between drains of about two rods for each foot in depth. In clay land an increase in the depth of laying the tile will usually not permit an increase in the interval between drains.

GRADE

Drains must always have some grade to insure the flow of water. If the direction or extent of the natural grade is questionable a leveling instrument should be used to determine the conditions. Often a home-made instrument using a carpenter's level is very serviceable.

A very small grade will suffice for the flow of water in a tile. Tile drains will operate on a grade of a half inch per hundred feet but a fall of six inches to a foot per hundred feet is much more desirable. The less the fall the more careful must be all the construction to insure permanency, and relatively larger tile must be used. In soils of a quicksand nature it is important that the lateral drains should have no greater grade than the main or that silt wells be constructed at intervals to collect the sediment and permit its removal.

SILT WELLS

A silt well is a pit in the course of the drain, the bottom of which extends two or three feet below the line of tile. The water comes in at one side and goes out at the other. Any coarse material will settle to the bottom. One or two sections of sewer tile placed on end with junction connections make the most simple and permanent construction. Surface water may to advantage be admitted through the silt wells, thereby protecting the system of drains from surface wash.

SIZE OF TILE

The size of tile, will, of course, vary with the area drained, the grade and presence of surface and underground courses. The tendency of the day is to increase rather than decrease the minimum size of tile used. In general, tile smaller than three inches should not be used. From that size they will increase according to the

extent of the system. It is not now uncommon for tile as large as two feet in diameter to be used. Three-inch tile in lines not more than six hundred feet long are usually best for lateral drains. Up to fifteen hundred feet a four-inch tile may be used, providing the grade is not less than four inches per hundred feet. It is difficult to make exact statement concerning the proper size of main drains. In general they should be capable of removing one-fourth of an inch of water from the drainage area in twenty-four hours. Treatises on drainage give tables and formulæ by which these relations may be calculated. An increase in the grade increases the rate of flow of water. Doubling the grade increases the carrying capacity of the drain about one-third. The following figures give some idea of the area of land drained by some common sizes of tile when laid at different grades:

NUMBER OF ACRES FROM WHICH $\frac{1}{4}$ INCH OF WATER WILL BE REMOVED IN 24 HOURS BY OUTLET TILE DRAINS OF DIFFERENT DIAMETERS AND DIFFERENT LENGTHS WITH DIFFERENT GRADES.

Diameter of tile in inches	Grade in inches per 100 feet									
	1		2		3		6		9	
	Length of drain in feet									
	1,000	2,000	1,000	2,000	1,000	2,000	1,000	2,000	1,000	2,000
	Acres of land drained by different sizes of tile									
5.....	19.1	15.7	22.1	19.4	25.1	22.7	32.0	30.3	37.7	36.3
6.....	29.9	24.8	34.8	30.5	29.6	35.9	30.5	47.8	59.4	57.3
7.....	44.1	36.4	31.1	44.8	58.0	52.8	74.0	70.1	87.1	84.1
8.....	61.4	50.7	71.2	62.6	80.9	73.6	103.3	98.0	121.4	117.3
9.....	82.2	68.1	95.3	83.8	108.4	89.6	138.1	131.3	162.6	157.1
10.....	106.7	88.5	123.9	108.9	140.6	128.1	179.2	170.5	211.1	204.4

ANGLE OF JUNCTIONS

Drains should join at an acute rather than a right angle. In other words the union of two lines of tile should have the Y rather than the T form to prevent the accumulation of sediment where the two streams of water come together. If the arrangement of the laterals is at a right angle to the main they may be curved in the last rod of their course. The union should be made at the center

of the main so that the water from the lateral will have a slight drop. The grade of the last few feet of the lateral drain may need to be increased to secure this construction. It is a good plan to use junction tile which have the proper size of connection. For example, a 10-inch by 4-inch junction means a ten-inch tile which is cut to receive a four-inch lateral. If the junction is made by cutting the tile with a trowel by hand, the union should be well bedded in cement after first laying around the tile a single layer of paper to prevent the cement from running into the tile.

CONSTRUCTION OF TRENCHES

Short ditches may be dug by hand using spade, pick and shovel. The lack of adequate help often makes it difficult to get extensive drainage systems constructed in this way. The use of horse and machine powers reduces the difficulty of construction somewhat. If the land is very stony or full of roots, hard labor must be employed perhaps with the use of dynamite. On land that is not too stony the ditching plow drawn by one or more teams is very helpful. There are a number of plows on the market for this purpose that are very useful. Next in complexity is the large ditching plow equipped with wheels and drawn by several teams which



FIG. 112. OPENING A DITCH WITH A PLOW.

tear up the soil and elevate it out of the ditch. There are two or three machines of this type such as the Cyclone, and the Bennett. Finally there is the large engine-driven ditching tractor of which the Buckeye is the best known type on New York farms.

The large plow is suitable for the individual farmer who has a considerable area to drain and has the horses for other purposes. The tractor ditcher costs so much that it is seldom a single farm is large enough to justify its purchase. It may be purchased jointly by a number of farmers who have drains to be constructed, or it may be purchased by one person and ditches dug by contract. Machines have been put into several communities for this purpose.

For tile drains the ditches are usually dug from twelve to fifteen inches wide according to depth, and with vertical sides to minimize the amount of earth moved. The bottom is finished with a compact surface and a small lateral curvature to afford a good base for the tile.

LAYING THE TILE

The tile are best laid by hand by a person in the ditch who should work backward and place each tile firmly in position, and if necessary wedge it a little with pebbles or earth to hold it in place. Where the ditch is deep and narrow a hook is sometimes used to place the tile.

BLINDING THE TILE

As soon as the tile are laid they should be lightly covered with earth which process is known as back filling or blinding. The sides of the ditch may be trimmed off with a sharp spade. This should be carefully done as should also the tramping to avoid pushing the tile out of line. As soon as the tile are covered three or four inches deep one may proceed to fill the ditch roughly with shovels, or with a team hitched to a plow by the use of a long evener, or by means of a horse and dump scraper. On long lines of ditch the filling is sometimes done with a road scraper.

ENTRANCE OF ROOTS INTO TILE

The tile is sometimes stopped by the development of roots which gain entrance through the joints. The depth at which the tile are laid has very little to do with this difficulty. It is determined by the presence of a perpetual flow of water in the tile from some spring. In dry periods this water seeps from the

joints and moistens the soil, which condition attracts the roots. Protection of the upper half of the joint against the admission of silt is some aid to prevent the entrance of roots into the tile.

CONSTRUCTION OF OUTLETS

The construction of a drainage system should begin at the outlet and end there. There must be a sufficient grade to dispose of the water at the outlet. After the remainder of the system is constructed the outlet should be carefully protected, especially if the grade is small. This part of the system is especially in danger of being closed by tramping, caving of banks, freezing, growth of roots and other obstructive processes. If possible the water should have a free drop from the end of the tile. It is usually advisable to build up an abutment of concrete or stone with an apron upon which the water may fall without cutting out the bottom of the ditch.

In laying out the ditch as few outlets should be provided as practicable. Where several laterals might empty into an open ditch it is often better to drop back a couple of rods from the open ditch and put in a sub-main to receive all these laterals. This arrangement gives one instead of several outlets to be finished and cared for from year to year.

COST OF DRAINAGE

The cost of drainage varies greatly, depending upon the nature of the soil, the presence of stone and roots, the depth, size of tile, season when the work is done, the method of construction, and the local labor conditions. For three or four inch tile the cost of the finished ditch per rod in soil not particularly foul with stone and roots is from forty to sixty cents per rod. On a system of 2,560 rods constructed by hand where the size of tile ranged from three up to ten inches, the average cost per rod including all charges was sixty-eight cents. System aggregating 8,398 rods were constructed under the same management and on the same farm using a traction ditching machine, the size of tile ranging from three to thirteen inches, and the average cost was 63 cents per rod. Some of the work done with the machine was more difficult than any done by hand. The range in the cost of tile per

rod was from 17.5 cents to 94.5 cents. The average cost of trenching with the machine was 17 cents per rod. The cost of drainage on this farm was from \$29.74 to \$43.80 per acre. The soil is a clay loam containing a few stones. A large part of the drains were arranged systematically.

Where a few lines of tile are laid in wet places the cost per acre will be less than where the drains are placed at regular intervals. The farmer would best begin by draining the wettest places having in mind that he may wish to extend the system.

RETURNS FROM DRAINAGE

The returns from drainage are large. As a matter of fact very little land is naturally well drained. Drainage will usually increase the yield of crops. The value of such increase depends on the nature of the crop. Some special crops such as flowers, ginseng and certain vegetables will quickly pay for a very frequent system of drains even as close as ten feet if the land is naturally wet. In mixed farming and fruit growing it is the observation of many practical farmers that the need for drainage is increasingly apparent under the usual system of cropping and that a moderate amount of drains well placed is about the best investment that can be made on the farm. Systems of drains in land which had been tilled but which was more or less wet have usually paid for themselves in four or five years and often in much less time.

The life of a well constructed tile drain should be measured by decades rather than by years.

LAWS RELATIVE TO DRAINAGE

It is frequently necessary for one to seek an outlet for drainage water across or upon a neighbor's land. The value of land drainage to the public is being more and more recognized and provision made for its installation. It is now possible for a person to oblige his neighbor to let him have a right of way to a suitable outlet for drainage water. The person benefited must of course pay the cost of construction to secure the outlet. In these cases where a large area of land embodied in several farms is involved cooperative action is essential.

There are two provisions of the law of New York for the drainage of wet land for agricultural purposes. The first of these is under the Agricultural Drainage Statute, Consolidated Laws of the State of New York, chapter 15, as amended by chapter 624 of the Laws of 1910.

The second provision is contained in the act establishing the State Conservation Commission, Consolidated Laws, chapter 65, article 8. The general procedure is the same under both acts and the cost of securing the right of way and constructing the drainage ditch is assessed against the land benefited. They usually deal with the large outlet canals but are applicable to secure an outlet for the drain from a single farm.

In a general way one may take advantage of the natural fall of the land in establishing an outlet for a drainage system and adjoining property owners must provide for the drainage water so discharged as surface water. As yet no such obligation is recognized to apply to water collected and discharged by tile drains except as it reaches the adjoining property as surface water in a natural drainage course.

There are very few cases of drainage which are not provided for in the existing drainage laws of the state.

LIME, ITS VALUE AND IMPORTANCE

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Within the past few years farmers have manifested great interest in the use of lime. It is well known that nearly all soils of New York State show benefit from its application. The exception to the rule is found in a narrow strip of limestone soil extending eastward some distance from Syracuse and westward to Lake Erie. But even here there are local areas where lime is needed. With this one exception, practically all the soils of the state are benefited by the use of lime, and generally the further south in the state one goes, the greater the need of it; the hill lands of southern New York being especially lacking in this element.

Lime is being used in increasing quantities and there is a growing interest in the practice of liming as a step in soil improvement; but experience continually shows that to get best results, lime must be applied systematically.

DIFFERENT FORMS

Since farmers are paying varying prices for the different forms of lime and are using the product in many ways, not always most wisely, it is advisable to devote a little time to the discussion of this phase of the subject. Because so much uncertainty exists it seems best to emphasize the difference between the various forms; to explain the factors involved in purchasing lime, so that an intelligent choice can be made among the numerous qualities of materials, offered as they are at varying prices; and to set forth the principles governing its rational use.

The supplying of lime for application to the land has developed into a profitable industry, and there are many different forms and grades on the market. Great claims are frequently made concerning the value of a particular grade. Lime products are frequently sold without a very definite guarantee as to quality and composition. All these facts tend to cause confusion in the mind of the purchaser.

The term "lime" is applied loosely to several products — calcium oxide, or burned or lump lime; calcium hydrate, or water-slaked lime; calcium carbonate, or ground limestone or marl; calcium sulphate, or gypsum or land plaster.

In the beginning of this discussion it is necessary to eliminate gypsum, since it does not have the power to correct acidity — a condition which lime, in general, is used to overcome — even though it may perform some of the other functions of lime. Also, it is almost universally held at a price which makes its use prohibitive.

Calcium carbonate is the natural source of all lime compounds used in soil improvement, and occurs in nature in great abundance in the form of limestone, shells and marl. If it is decided to use limestone, that which contains at least 90 per cent. of calcium carbonate should be insisted upon.

Quick or burned lime is the most concentrated of the common lime materials. It is produced generally by burning in a kiln a carbonate of lime, such as limestone. By this method the carbonate is divided into two compounds, carbon dioxide and quicklime. The carbon dioxide is driven off as a gas and makes up 44 per cent. of the carbonate of lime with which the operation began. In other words, in each hundred pounds of carbonate of lime, assuming it to be pure, there are 56 pounds of burned lime. Stated another way, nearly two tons of limestone must be employed to make one ton of burned lime.

When burned lime and water enter into combination hydrated or water-slaked lime is produced. Commercially prepared it occurs as a fine, white, dry powder, and is easy to apply to the soil. In the process of slaking, 56 pounds of fresh burned lime are increased to 74 pounds of hydrated lime by the addition of 18 pounds of water. Or, a ton of hydrated lime contains 486 pounds of water and 1,514 pounds of actual lime.

Many of the hydrated limes on the market contain considerable quantities of carbonate of lime, and aside from their physical condition are but little better than ground limestone. Generally hydrated limes are held at prices much higher than their actual value would warrant.

The slaking of lime with water is accompanied by the evolution of considerable heat. Therefore, the dust which arises from burned lime when it is handled, coming in contact with perspiring men and animals, causes discomfort and sometimes quite serious burning. Hydrated lime is less caustic than burned lime and therefore less disagreeable to handle.

Burned lime and slaked lime, by the absorption of carbon dioxide from the air and soil, eventually form carbonate of lime, the same compound from which they were made by the burning process. The beneficial effects of lime on soil are thus due in the main to carbonate of lime, regardless of the form in which the lime was applied to the land. The application to the soil of fresh burned lime, after slaking has taken place, has an advantage, perhaps, in that intimate contact between the lime and soil is obtained because of the fineness of the lime material secured by the slaking process.

Air-slaked lime is formed by exposing burned lime or slaked lime to the air, and is a mixture of hydrate and carbonate of lime, the proportion of the two depending upon the time the lime has been exposed, and upon the surrounding conditions. Burned lime exposed to the air first absorbs water and then carbon dioxide. If the process is carried to the finish the result will be calcium carbonate or air-slaked lime, in a finely divided condition.

On the market one frequently finds for sale so-called "agricultural lime." This term is indefinite, since various products are sold under this title—sometimes a mixture of carbonate and hydrate; then again, refuse lime, or incompletely burned limestone, unfit for masonry purposes, ground and mixed with lime which has partially slaked. The only guarantee of the value of this material is an analysis showing its actual lime content.

Many by-product limes are of value for agricultural purposes. They generally consist of a mixture of hydrate and carbonate of lime or else are largely carbonate. All such materials are valuable just in proportion to the amount of lime they carry. Among such are waste lime from the manufacture of soda ash, carbonate of lime from soap factories, lime from acetylene generators, waste lime from sugar beet factories and tanneries and lime from gas purifiers. Waste-gas limes should be used only after exposure to the weather for a considerable time.

Oyster shells contain about 95 per cent. carbonate of lime and if finely ground are as good as limestone for the soil.

Wood ashes, often valued chiefly for their content of potash and phosphoric acid, contain about 30 per cent. carbonate of lime, which is equal in value to an equivalent amount of calcium carbonate in limestone.

Marl is a loose deposit, mostly of small shells mingled with clay. It varies greatly in composition and should be purchased only on the basis of carbonate of lime present as determined by analysis. Limestone and marl, carrying equal amounts of calcium carbonate, are of equal value in soil improvement.

Another material quite rich in lime is basic slag, commonly known as Thomas slag. In commerce it is valued chiefly for its content of phosphoric acid, which is about 16 per cent. It contains free lime, has an alkaline reaction and is an efficient carrier of phosphorus on some soils. It would not be economical to use it to overcome acidity, since lime as such is much cheaper, but it has a place in soil improvement.

The advisability of using fresh burned lime, slaked lime, carbonate of lime or any of the by-products, depends upon many factors. The chief factor is the cost of a given quantity of calcium oxide, since lime is purchased and applied chiefly for its power of correcting acidity. The value of the various forms, if considered from this point of view alone, must be comparable to the amounts of calcium oxide or actual lime they contain.

Bearing in mind the relationship previously brought out, it is evident that the price of limestone per ton should be less than that of quicklime, and the price per ton of slaked lime less than of quicklime, but greater than that of limestone. Stated exactly, 56 pounds of quicklime, 74 pounds of slaked lime and 100 pounds of ground limestone or marl should be purchased at approximately the same prices, assuming equal purity, and thus purchased are equally good bargains; acid correcting power alone being considered.

EXPENSE OF LIMING

In much of southern New York (the writer cannot give the figures for other sections of the state) \$4 per ton is the average price for fresh burned lump lime delivered in car lots at

the railroad station. On this basis, limestone and marl should cost \$2.24 per ton and slaked lime \$2.96 per ton. On the contrary, farmers frequently pay \$4 to \$6 per ton for limestone and marl, and \$7 to \$9 per ton for slaked lime. It is fair to say that one can reasonably pay perhaps a dollar more per ton for limestone, marl and hydrated lime than their indicated value when compared to fresh burned lime, because the former materials are much more easily handled.

In estimating the cost of liming land, the cost of the material, the handling and the application must be considered. Assuming that an application of one ton of burned lime per acre is correct, how does its cost compare with that of the other materials?

One ton of burned lime at railroad station.....	\$4 00
Hauling	1 00
Cost of applying	2 50
<hr/>	
Total cost per acre.....	\$7 50
<hr/>	

The cost of applying is high on account of the fact that burned lump lime must be slaked before it is applied to the soil, and this involves extra handling. It is also quite difficult to apply.

The following figures tell the story in regard to hydrated lime:

2,640 pounds of hydrated lime (equivalent to one ton of burned lime)	
at \$7.00 per ton	\$9 24
Hauling at \$1.00	1 32
Applying at \$.75 per ton.....	99
<hr/>	
Total cost per acre.....	\$11 55
<hr/>	

The difference between \$11.55 and \$7.50 is due to a high first cost in the case of hydrated lime and the expense involved in paying for and hauling 640 pounds of water combined with the burned lime, notwithstanding the fact that the cost of application is smaller. It is true that the convenience of handling and storing hydrated lime may in a measure affect its increased cost over the burned.

In the case of ground limestone and marl the following conditions exist:

3,570 pounds of limestone (equivalent to one ton of burned lime) at	
\$4.00 per ton	\$7 14
Hauling, at \$1.00 per ton.....	1 78
Applying, at \$.75 per ton.....	1 33
Total cost per acre.....	<u>\$10 25</u>

The above computations are approximately correct for New York State conditions. Ground limestone can be hauled with less discomfort than the other forms, and if the cost per acre of such were not much greater than that of caustic lime it would be satisfactory. High freight rates are often a contributing factor. The greatest difficulty seems to be that producers in New York State generally charge too high a price for the material at the quarries. In New York ground limestone costs generally — though a few producers should be excepted — \$2 or more a ton, f. o. b. cars at quarries; whereas in Ohio and Pennsylvania it is usually put on the cars for \$1 to \$1.50 per ton.

CONDITION OF MATERIAL

Often our farmers do not get the results they expect from limestone. This, in a measure, is due to the fact that too small applications are made, induced no doubt by the relatively high cost of the material. If one ton of burned lime or its equivalent in slaked lime or ground limestone is used, there is generally little difference in the results.

As a general proposition it may be said that a good course to pursue is to purchase that form of lime which gives the greatest amount of calcium oxide for the money involved, providing the mechanical condition is satisfactory.

Limestone can be made very fine by burning and then grinding the burned lime. This product, known as ground burned lime, is satisfactory, and if sold at a reasonable price should be used in increasing quantities with good results.

Fineness of materials is important in liming land. If there is an advantage here it is secured by the use of burned lime which,

in the process of slaking, is broken into much finer particles than are produced by grinding limestone. It often happens that small applications of burned lime, after slaking, give good returns; whereas an equivalent amount of ground stone shows no effect. Such differences are not so noticeable when a ton or more of burned lime or its equivalent in limestone are used per acre. In the case of the small amounts of material it is a matter of fineness of division. The more finely divided material is when applied to the soil, the more quickly it is taken into solution and disseminated through the soil mass. For immediate results fine material has a great advantage. Limestone, the major portion of which passes a sixty-mesh sieve, has given good results.

Purity of material is also a point to be considered. Some marls are only 50 per cent. pure carbonate of lime. Ground limestones on the market run from 80 to 95 per cent. pure carbonate. Other forms of lime show as great variations. The impurities in general do no particular harm; they are merely dilutents. There is no objection to using a low-grade material so long as the price is right and reduced in proportion to the impurities present. Buyers of lime can protect themselves only by always insisting upon creditable guarantees of quality.

The character of soil determines to some extent what kind of lime to purchase. Many soils need improvement physically. More of the plant food in them should be made available as well as acidity corrected. Burned lime is best under these conditions. Carbonate of lime corrects acidity but does not have much effect upon physical conditions.

QUANTITY PER ACRE AND MODE OF APPLICATION

From the evidence, it appears that as a rule burned lime has more to commend its use than the other forms. Its cost of application is less; it breaks up very fine, giving intimate contact with the soil — hence immediate results; and in addition to correcting acidity it has an important physical action on compact, hard soils, rendering them more open, porous and friable.

It is generally best to purchase that form of lime which gives the greatest amount of calcium for a dollar, be it quicklime,

hydrated lime or limestone. Quicklime must first be slaked by placing it in piles in the field as it is unloaded from the car. After it slakes it can be spread from a wagon or with a manure spreader. Hydrated lime and ground limestone are evenly distributed with a lime or fertilizer spreader. The fertilizer attachment to the modern grain drill is also satisfactory, provided it is so constructed that it has sufficient capacity.

In New York State 1,000 to 2,000 pounds of quicklime or its equivalent will give good results on general farms where a rotation with clover is grown. In such cases the above amount may be used once every rotation period, preferably applied to the grain crop with which the clover is seeded. For alfalfa, usually even twice as much is needed as previously mentioned. If lime is used in a rotation with potatoes let it be applied to the crop of seeding which follows the potato crop. On farms where rotations are not followed, a general suggestion is, use lime at intervals of four to eight years. On farms where definite rotations are followed it may be used once in every rotation period when seeding to clover. In all cases it should be used at least often enough to insure good clover.

It makes but little difference when lime is applied except that it should be put on the soil after, rather than before plowing, so it will not be buried too deeply. The harrowing of the land in preparation for the coming crop will aid in securing a good distribution of it. If possible, liming should be done in a slack season, and by all means should be hauled when the roads are good.

LIME NECESSARY FOR CLOVER

It is a matter of experience that where clover is failing, applications of lime prove very beneficial. Most farmers realize that clover growing is at the bottom of success in nearly all systems of farming. Because of this and because in the past few years so much has been said about the use of lime, there is some likelihood that too much importance may be attached to its use, and soils be neglected in other regards. Such mistakes should be guarded against. There should be no misunderstanding regarding the fact that lime can in no sense take the place of other plant foods, of

tillage, of drainage, of humus, or of any other factor of soil fertility. For this reason the terms "fertilizer lime" and "lime fertilizer" are misnomers. Lime does not take the place of fertilizers, animal or chemical.

When a soil by its chemical reaction shows acidity, or when this condition is indicated by the failure of leguminous crops,—especially red clover, where they formerly grew well,—the best result can not be obtained unless lime is used as a soil amendment along with chemical and animal manures. Lime materials can furnish only lime. They can not make up for any deficiency in nitrogen, phosphoric acid or potash.

FUNCTIONS OF LIME

The fact that lime is necessary to correct acidity has already been dwelt upon; but this is not its sole function. It promotes the availability of phosphorus and potash, and is one of the essential elements of plant food. It tends to make clay soils more porous and sandy soils more compact.

Acid compounds are constantly being formed in soils by the decay of organic matter, by the application of some fertilizer, and in divers other ways. So long as there is enough lime in the soil for such compounds to unite with, the soil is not acid and such acid compounds do no damage to crops. In New York State many soils are acid, and the time is coming soon when the available lime in many others will be used. The acid conditions manifest themselves by the appearance of acid loving plants, such as sorrell, paint brush, moss, etc. Yearly, new fields show red with sorrell in May and June, an almost infallable sign of lack of lime and of increasing difficulty in the growing of leguminous crops.

Lime is of prime importance in the maintenance of the supply of soil nitrogen. This is a very practical problem. Nitrogenous fertilizers are very expensive. Lime in the soil enables the farmer, however, to use a greater degree than is otherwise possible, the inexhaustible supply of nitrogen in the atmosphere in crop production. Leguminous plants—such as clover and alfalfa—gather nitrogen from the air through the bacteria in the nodules on their roots, and the keeping up of the supply of soil nitrogen

is largely dependent upon this action. These bacteria, and consequently the nodules, do not develop in acid soils. Hence, through the failure of the legume (other classes of plants do not possess this function) no nitrogen is added to the soil. In fact the supply is being diminished in many soils. Organic matter containing nitrogen, such as stable manure and clover sod, must go through a certain kind of decomposition before the nitrogen so contained becomes of use to plants as food. In the absence of sufficient lime to overcome all acids in the soil as fast as they are formed, this process is interfered with and the nitrogen in the stable manure or other organic fertilizer may be wasted instead of being made into plant food. Between these two difficulties, the failure of legumes and the unfavorable fermentation in acid soils, it is indeed hard to keep up the nitrogen supply in some lands.

The most beneficial effect of lime is promotion of the growth of leguminous plants. This results in building up the nitrogen supply and the general fertility of the soil. It is to be noted that this soil improvement is accomplished principally through leguminous crops, and if rotations are not so planned as to advantageously include them, the end and aim of liming—soil improvement—is defeated. The blind application of lime is of very little use.

The beneficial effects of lime usually do not appear at once, except on legumes. The latter grow better almost immediately,—if the soil needs lime—develop more nodules and gather more nitrogen. The benefit to other crops evidently cannot begin to show until at least one leguminous crop has followed the application of lime, and been plowed under, either in its entirety or the stubble and roots. In all cases, according to the Indiana Experiment Station, “the promotion of the growth of legumes is the one effect which above all others justifies the use of lime.”

CARE IN ITS USE

It is to be emphasized that no form of lime should be mixed or used directly with stable manure, notwithstanding the claim of many manufacturers of limestone. Neither should lime materials be combined with acid phosphate nor with fertilizers containing it. Materials containing organic nitrogen, such as dried blood and

tankage, should not be mixed with lime materials. Manures and such fertilizers should be used with different crops from those to which lime is applied, or else they may be used with lime after sufficient time has been allowed for the latter to become thoroughly incorporated with the soil.

In this discussion much has been said about the benefits of lime. However, there may be some danger in its use. It may cause too much plant food to become available, as well as the leaching of nitrogen and the too rapid decay of organic matter. Hence it is necessary to emphasize its use in medium quantities at intervals of five or six years as previously indicated. Also, it must be used in a cropping scheme which is so planned that the organic matter of the soil is maintained.

The production of large crops by any method except direct addition of plant food — be it by superior tillage, drainage or the use of lime — is an exhaustive process so far as the soil is concerned, and necessitates the use of more manure, the growing of more clover and the use of more fertilizers in order to maintain the soil balance. Farmers who use lime must take cognizance of these facts or lime may make their farms poorer after a few years, instead of better. Used judiciously, lime is a benefit; used injudiciously it is a detriment. It is not a fertilizer. Dependence upon lime alone will result in ultimate failure. In the failure to recognize these principles lies the truth of the sayings, "lime and lime without manure makes both farm and farmer poor," and "lime makes a rich father but a poor son."

It must be borne in mind that the good effects and the bad effects of liming are operative at the same time. The question as to which shall dominate is a question of soil management. The use of rather small quantities of burned lime, or the use of the milder forms of lime in increased quantities in proper crop rotations, in connection with manure and plenty of leguminous crops, will cause constructive work. The use of large quantities of lime without the use of manure and leguminous crops, and without the consequent attention to the conservation of soil humus, will cause destruction of crop producing power.

Limestone soils are renowned for their fertility, and have been known to retain their productivity for generations. In the light

of this it must appear rather absurd that any ordinary application of lime will injure any soil. The real trouble in many cases where lime has been said to cause injury is the lack of nitrogen and organic matter. This is often the case where as yet but little liming has been done. These conditions are due to poor rotations — in the majority of cases to none at all — and to a very common disregard for the proper method of the preservation and use of stable manure. The poor conditions have come about independently of the use of lime. The above statement is made to show that many of the unfavorable results attributed to the use of lime are in reality due to poor methods of farm management. Sometimes the use of lime is a convenient scapegoat, an excuse for poor results, just as fertilizers are at times unjustly condemned and with no more reason.

THE VALUE AND USE OF FARMYARD MANURE

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Farmyard manure differs from commercial fertilizers in that it contains, apart from plant food, two constituents, the value of which it is difficult to gage. So far as the plant food itself is concerned, we may compare it with equivalent materials in commercial fertilizers. We know that a pound of nitrogen in nitrate of soda or a pound of phosphoric acid in acid phosphate has a definite value. What then is the value of these substances in farmyard manure? Is a pound of nitrogen in the latter worth as much as a pound of nitrogen in nitrate of soda? Fortunately for us we possess data that permits us to give a fairly accurate answer to these questions.

Numerous experiments in this country and abroad have conclusively demonstrated that a pound of nitrogen in farmyard manure is not worth as much as a pound of nitrogen in a pound of nitrate of soda. They have demonstrated that under average conditions as to climate, soil and crop, the increase from manure nitrogen is only about half that from an equivalent quantity of nitrate nitrogen. In other words the nitrogen in animal manures is worth only half as much or less than nitrate nitrogen. If we can buy the latter at eighteen cents per pound, the nitrogen in manure should not be allowed a value greater than eight or nine cents per pound.

Similarly, we have reason to conclude from facts in our possession that the phosphoric acid in manure may be allowed a value of three cents per pound and the potash about the same value per pound.

Now, taking for the sake of illustration, horse manure as containing 0.5 per cent. of nitrogen, 0.4 per cent. of phosphoric acid, and 0.45 per cent. of potash, we find respectively ten, eight and nine pounds per ton of these constituents. Hence the nitrogen at nine cents per pound would be worth ninety cents; the

phosphoric acid at three cents per pound, twenty-four cents; and the potash at three cents per pound, twenty-seven cents. Giving us a total value per ton of one dollar and forty cents in round numbers. This is a fairly generous allowance for plant food contained in the average sample of horse manure, and if we were to buy it for the plant-food alone, we could afford to pay no more. Calculated in the same manner the average sample of cow manure has a value not greater than one dollar or one dollar and ten cents per ton. However, animal manures contain something aside from their nitrogen, phosphoric acid and potash, that may render them important or even indispensable for certain soils and for certain crops. The average sample of horse manure contains four hundred and fifty or five hundred pounds of organic matter per ton and it contains in addition countless numbers of bacteria. It is not a simple matter to place a definite value on these two constituents of manure. For some soils and crops they may be worth nothing. Occasionally they may be a hindrance rather than a benefit. For other soils and crops they may prove of incalculable advantage. Soils poor in humus and limited in their power to retain the rain which falls upon them would most readily respond to additions of these constituents. Heavy soils well provided with humus and plant food might derive but slight advantage from the humus making material and bacteria supplied in manure. Yet, generally speaking, it would be unwise to make an allowance for these materials. We should not really include them in our valuation of the plant food, and should not pay more than one dollar and fifty cents per ton for horse manure, and one or one quarter dollars for cow manure. Beyond that we should be paying for something which would give us very uncertain returns. If a greater valuation is to be placed at all on animal manure, it may be made in connection with run down soils largely depleted of their available plant food and of their humus. In the restoration of all such soils the humus forming material and the bacteria present in the manure may produce effects that green manures and commercial fertilizers would produce but slowly.

The valuation placed on farmyard manure by the trucker and gardener is naturally greater than that placed on it by the general

farmer. The market gardener, especially, finds it necessary to locate himself near the city. He must often use land not naturally adapted for the growing of large and early crops of vegetables. By the use of enormous quantities of manure he attempts to transform soil that is naturally compact and cold, into a warm, mellow loam. Moreover, the value of his land is often so great that he cannot afford to grow but one crop in a season. He must grow two or even three crops in one growing season, and has not the opportunity to utilize green manures for restoring the vegetable matter that is constantly decomposing and disappearing from his fields. For him there is no other suitable source of organic matter. He applies not infrequently as many as forty or even fifty tons of horse manure per acre in a single year, at a cost startlingly great to the general farmer, but not excessive to him whose crops may have a retail value of three or four hundred dollars per acre.

But while manure is worth much less for the general farmer than it is for the trucker, it has even for him a value that is quite considerable. It is estimated that the average dairy cow will produce ten tons of manure in a single year. The average horse or mule will produce five tons in one year. Hence it is evident that on many farms there is produced one hundred, two hundred, three hundred, or even five hundred tons of manure per annum. This waste material may range in value from a few dollars where only two or three animals are kept, to many hundreds of dollars where large herds of cattle are kept. In its aggregate, the value of the manure produced on the farms of the United States runs into hundreds of millions. From the standpoint of national economy we are dealing, therefore, with a commodity of great significance to the agricultural and likewise to the urban communities.

We come thus to the very important question of the conservation of the plant food contained in animal manures. We are no longer strangers to the fact that improperly stored manure may lose as much as one-half of its total plant-food value. When kept in the open it loses a large portion of its valuable nitrogen compounds by leaching. It loses still another portion, thanks to the fermentation processes, in the manure heap, and the resulting es-

escape of much ammonia and nitrogen gas. A simple calculation will show that a lot of manure containing,—let us say one hundred tons,—may lose as much as one thousand pounds of nitrogen and four or five hundred pounds of potash. And because these represent the most readily available portion of the nitrogen and potash in the manure, their worth is proportionately much greater than that left in the manure heap. But even at ten cents a pound this nitrogen is worth one hundred dollars and the potash at three cents a pound is worth twelve or fifteen dollars.

Surely the average general farmer cannot afford to throw away annually a sum of money that would more than pay his taxes. More than that, the direct losses just noted are accompanied by indirect losses that may be even more disastrous. Investigations conducted at our experiment stations confirm the observations of intelligent farmers in that they show the value of manure in assuring a catch of clover or other legumes on acid soils. It has been demonstrated time and again that fields generously dressed with farmyard manure will grow clover and alfalfa in spite of the lack of lime; whereas on the same soil these crops would fail except where lime is used. And it may not be amiss to point out again that manure properly treated and cared for will not merely produce a larger crop, but will provide for a better sod and for better stubble; for plants that are deeper-rooted, and for a soil better supplied with humus. He who would serve the cause of agriculture could well spend his time in teaching the doctrine of conservation. He should tell his neighbors that manure kept under cover, and kept moist and well compacted, would lose but little of its fertility. He should teach them that in all but the lightest of soils the manure should be spread and plowed under with little delay whenever it is practicable to do so. Let us remember that manure is essentially a nitrogenous fertilizer, and that much of its nitrogen is just as available as that contained in tankage, dried blood or ground fish. Can the farmer afford to throw away a hundred or a thousand pounds of manure nitrogen, and then attempt to replace it by commercial fertilizer whose nitrogen may cost him twenty or twenty-five cents a pound? Surely in this day of wider knowledge and of better farming we should refrain from wasting our substance.

VALUE OF ORGANIC MATTER IN SOILS

FOREST HENRY

Farmers' Institute Lecturer

In order that one may clearly understand the true value of organic matter in soils he must first understand something of the law governing the growth of plants. He must understand that all the plant foods taken from the soil by the plants must be taken in a soluble form. They must first be mixed with many times their volume of water before the plant can make use of them, since a plant drinks in its food; therefore, it must be in a form of a thin soup before the plant can make use of it. This means that the soil moisture is just as important as plant food. Anything that will tend to conserve soil moisture will therefore tend to improve the growing crop when we have our periods of drought. In fact there are few seasons in New York State when the later maturing crops are not affected more or less during the growing season by drought.

Soil is composed of ground rock and decomposed organic matter, and ground rock alone will not hold moisture. The more organic matter it contains the more soil moisture it will hold in suspension.

Organic matter, then, is very necessary in a soil to assist in holding moisture near the surface where most of the feeding roots of plants are located. We also need the organic matter to assist in separating the particles of soil in a very wet season.

One of the conditions necessary for plant growth is warmth. When a soil becomes sodden as it will in a wet time, the air is shut out and consequently it does not warm up as it should for the best growth of vegetation; hence a wet season usually means a cold season. When we introduce organic matter in such a soil it separates the soil particles, admits air and sunshine and the soil in consequence becomes very much warmer. Vegetable matter in soils, therefore, assists in equalizing the soil moisture, making the soil more moist in a dry time and tending to warm it in a wet, cold season.

The breaking down of vegetable matter is also a means of unlocking plant foods in the soil. Most New York soils contain large amounts of potash, possibly enough in the first soil foot to grow good crops for the next 1,000 years without buying one pound, if it could only be unlocked.

The rotting of vegetable matter always tends to start a little muric acid which tends to unlock the mineral plant foods in the soil and put them in such a condition that water can take them into solution, when they will become plant food.

Vegetable matter in a soil also keeps it from washing. A new soil well supplied with organic matter scarcely ever washes. It is only when it becomes destitute of vegetable matter that it commences to gully and wash. It will also keep it from blowing in sections where the soil tends to drift in dry times.

In fact vegetable matter does about everything in a soil that is needed to put it in the very best possible condition to grow good crops. We need not worry about a soil getting "run out" so long as we keep it well filled with vegetable matter. The great question for New York farmers to solve is how to get this in the soils. Some will say by growing cover crops — this sounds well and in some instances perhaps may be made use of — but the one practicable way and the one thing that will help most of all is by short farm rotations with clover as the base. When a clover crop has been grown there is not only added vegetable matter in the soil, but actual nitrogen which is the most expensive element of plant food that New York farmers are buying. Many of the so-called cover crops that are turned under only add organic matter to the soil with very little plant food.

Many will say, "We cannot grow clover." This is because the conditions of the land are not inductive to its growth. Possibly the soil may have to be drained to get rid of surplus water first. This would be necessary for growing other crops. Perhaps the soil is sour and will have to be limed to remove the acidity before clover will grow. Both of these can be done and must be done before success can be achieved in growing maximum crops of any kind.

In my opinion at least 50 per cent. of the tillable land in New York can be vastly improved by tile drainage, and it must be done before one can grow the best crops of clover — or in fact anything else.

The great drawback in New York agriculture is lack of young men to go ahead with the work. Many of the New York farmers are men past middle life and they cannot be expected to go ahead and make these necessary improvements. Younger men must take hold, study the conditions and put improved methods into operation. There are great agricultural opportunities awaiting the young men of the East. Why not take hold of the work with a will? They cannot help but succeed if they will combine thought and action. The one great thing to be done is to make the conditions right so that you may grow bountiful crops of clover to feed the stock and land.

COMMERCIAL FERTILIZERS

D. P. WITTER

Farmers' Institute Conductor

The term "commercial fertilizer" as used in this article applies only to those elements of plant food sold in the market. It may mean a direct plant food or an amendment which is only indirectly beneficial to plants. Fertilizers in the form of manures will not be considered.

Only in exceptional cases can a permanent and successful agriculture be maintained by the use of commercial fertilizers alone. From the standpoint of a broad, national policy the fertility of the land must be perpetuated through cultivation and the use of the natural forces of soil and air.

The general farmer would have but little use for commercial fertilizers if he would give the land sufficient cultivation; would practice a short rotation and the growing of clovers and other leguminous plants; would keep the supply of organic matter in the soil up to the per cent. found in it when taken from the hand of nature and would provide drainage for wet lands. These methods practiced, he could grow maximum crops without the purchase of plant food.

We find most of our farm lands far from being in the condition above mentioned. The organic matter has been generally depleted, drainage is badly needed on a majority of our lands, and as a result they have become sour; and the latent plant food is not made available as fast as is needed for profitable crop production. To relieve this bad condition farmers have resorted to commercial fertilizers, to a considerable extent, for their supply of plant food.

The wise farmer will consider himself only as a steward. He will recognize the fact that he has no right to so handle his land that future generations cannot long survive, and he will adopt a system of farm management which will maintain the fertility of the soil on a basis which will endure for all time. To accomplish this, these five things are required, drainage of all wet lands, deep and thorough cultivation, a sufficient supply of organic matter in



FIG. 113. OATS SHOWING RESULT OF USE OF FERTILIZER.

Photograph taken July 3, 1913, just as oats were beginning to head. Where 200 pounds of commercial fertilizer (2-10-6) was used an acre, the oats were high and thick; where no fertilizer was used oats were poor and short

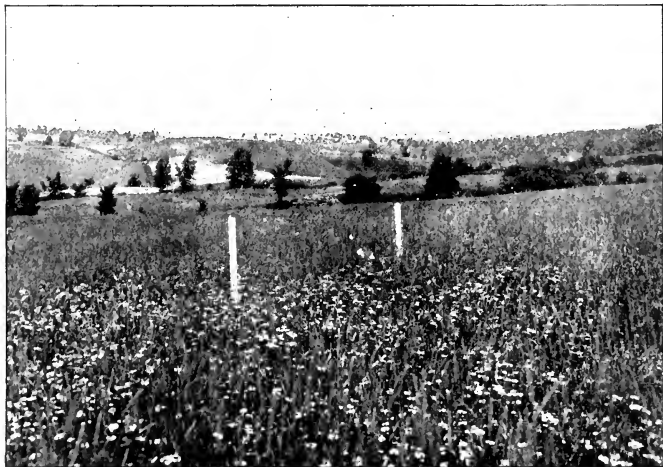


FIG. 114. TIMOTHY AND CLOVER MEADOW, SHOWING RESULT OF USE OF NITRATE OF SODA.

One hundred pounds of nitrate of soda an acre was used about May first. Where nitrate was used grass was high and thick; where it was not used grass was thin and full of daisies

the soil, a short rotation and the growing of some leguminous plants.

At the present rate of usage, which will probably be continued for many years, the world's supply of chemicals from which nearly all of the commercial fertilizers are manufactured, cannot always last. Let us hope that the supply will not fail before farmers have learned the true method of maintaining the fertility of the land.

Commercial fertilizers, at present, if intelligently used will generally bring a good profit.

Of the ten or more elements required for plant growth, comparatively only a few years ago but three of them (nitrogen, phosphoric acid and potash) were considered deficient in available form to grow maximum crops. Under present conditions the use of lime has proven that in many soils it is the controlling factor for plant growth.

It would be difficult to give the exact function of the different elements of plant food, each is so interwoven with the other, but generally considered they are as follows:

Nitrogen. Promotes growth and green leafage. Where only stalks and leaves are desired, as in the case of lettuce, celery, or grass that is not to bear seed, even a limited excess of available nitrogen will do no harm, unless lodging of the plant follows. An excess of nitrogen in comparison with the phosphoric acid and potash, retards and lessens flower and fruitage.

Phosphoric Acid. Promotes quick germination of seeds, enlarges root growth, hastens development, and increases the amount and weight of seeds. In other words, it has a decidedly beneficial effect upon the reproductive part of the plant.

Potash. The action and effect of potash on the plant is not so well understood as is that of some other elements, but its favorable influence on the formation of starch and other carbohydrates, and its effect in giving strength to straw and stalk, are well recognized.

Lime. Generally considered an amendment, is, in part, a plant food. It acts upon the soil and makes available other mineral elements; it corrects acidity where there is free acid, and it promotes bacterial action which hastens the decay of organic matter. It may also have a beneficial effect upon the physical condition of some soils, especially clay.

In the manufacture of commercial fertilizers the chief supply of nitrogen is from the nitrate beds of South America; the phosphoric acid is largely secured from the phosphate rock found mainly in Tennessee and the Carolinas, and the potash comes from the potash mines of Germany.

An analysis of thirty-four soils in this state shows an average in the first foot acre of 4,826 pounds of nitrogen, 5,904 pounds of phosphoric acid and 26,386 pounds of potash. This average of the mineral elements is maintained in each succeeding foot. Could all these elements be made available as the plant required, to grow 20 bushels of wheat an acre there would be nitrogen sufficient to last 138 years, phosphoric acid 295 years and potash 753 years. The fact that only a portion of this plant food is annually set free, and that it is beyond one's power to determine just how much or how little will go into solution during the growing season, the exact amount of nitrogen, phosphoric acid and potash to apply to the land to grow a given amount of any crop cannot be definitely fixed.

Many manufacturers are placing on the market special brands of fertilizers under the titles of "Potato Fertilizer" "Corn Fertilizer" and fertilizers for other crops. It is to be expected that such fertilizers will be used on many kinds of soils and under greatly varying conditions, and that the results derived from the indiscriminate use of such mixtures must often prove a loss to the buyer.

For many years scientific men and institute lecturers have urged farmers when buying commercial fertilizers to purchase them as they would flour or sugar; that is, to buy only the elements which, after most carefully selected information and experiment, their land seemed to require.

Until very recent years but little progress has been made along this line and farmers generally continued the buying of ready mixed fertilizers. Now many are purchasing the chemicals and either applying them separately or are practicing home mixing.

Perhaps one reason why home mixing of commercial fertilizers is not more generally practiced is because farmers have not known exactly how much of any element to use to produce the desired percentage. An example to illustrate how this is determined is given below:

At the time of sowing alfalfa recently, I used on an acre, 100 pounds of nitrate of soda, 500 pounds of acid phosphate and 50 pounds of potash. The percentage of the above mixture would be—

	Per cent.
Nitrogen	2.30
Phosphoric acid	10.77
Potash	3.84

The problem is solved as follows:

	Pounds	Per cent.	Pounds
Nitrate of soda	100	15	15
Phosphoric acid	500	14	70
Potash	50	50	25
Total	650		

We have here a mixture of 650 pounds of material containing 15 pounds of nitrogen, 70 pounds of phosphoric acid and 25 pounds of potash. Divide the amount of each element by the total amount of the mixture and we have the per cent. of each.

	Pounds	Pounds of material	Per cent.
Nitrogen	15 divided by	650 equals	2.30
Phosphoric acid	70 divided by	650 equals	10.77
Potash	25 divided by	650 equals	3.84

By this simple process the percentage of each element in any mixture may be found provided the analysis of the materials is given.

When ready mixed fertilizers are used the farmer will, as a rule, get more for his dollar if he purchases high-grade, readily available materials and uses less an acre, than if he buys the low-grade goods and uses relatively more. Much of the nitrogen in low-grade fertilizers is from sources which renders it very slowly available, also each ton contains more filler or worthless material, than does the high-grade goods. The price paid does not determine whether a fertilizer is high or low-grade. Phosphoric acid in the form of 14 per cent. acid phosphate, which can be purchased for \$12 to \$14 a ton, is a high-grade fertilizer if it is all the soil needs for the growing of the crop.

My observation and experience lead me to believe that, where lime or acid phosphate are used in fairly liberal quantities, for most of the soils in New York State—especially the clay soils—the purchase of more than a small amount of potash is not economical, and in many cases no return is given for the expenditure.

Where animal husbandry is practiced and the manures are well preserved and applied, the farmer should look to the farm manures and to leguminous plants for his supply of nitrogen, which is the most expensive part of plant food. The potash, which is found in the land in very liberal quantities, is made available by the rotting organic matter and by the use of lime and acid phosphate; so, by the use of the two last named, both of which are produced in this country and are comparatively cheap, one may usually supply all the available plant food necessary to grow maximum crops on average soils. Where animal husbandry is not practiced the purchase of nitrogen seems more necessary.

The amount of commercial fertilizer which will prove most profitable will depend, to some extent, upon the crop to be grown. For example, if 200 bushels of potatoes are grown on an acre of land at fifty cents a bushel we have an income of \$100, but if 50 bushels of oats were grown on the acre at fifty cents a bushel, and allowing one ton of straw at \$10, we have an income of only \$35, which is less than one half the amount received when potatoes were grown. One can readily see that the farmer can, other things being equal, well afford to use a much larger amount of commercial fertilizer on potatoes than would be profitable on oats.

It is important for spring planted crops that only fertilizers which contain readily available materials be used. To be of the greatest benefit the commercial fertilizer should be made from materials such as nitrate of soda, acid phosphate, and muriate or sulphate of potash, each of which goes quickly into solution in the soil waters, and give the plant a quick start. Later in the season, after the soil has become warm and the decaying organic matter has made latent plant food in the soil available, the plant will derive its growth from that source. When the crop is a special one, or when the plant food must be purchased for the entire season, the use of dried blood, cotton-seed meal or other like materials, which must decay before the plant food becomes available, may be most economical as a partial source of nitrogen.

As a rule nitrate of soda should be used only on plants just starting to grow or those not making sufficient growth. Generally it will not pay to use it on a leguminous plant that is well established and has the nodules on the roots, but, when *starting such*

plants as alfalfa, or upon timothy meadows where the root is good but a lack of nitrogen is apparent, an application of 100 pounds an acre will often give an increase in the crop of from 1,000 to 2,000 pounds of hay.

Phosphoric acid and potash are best applied *in* and not *on* the soil as they become fixed very near where they are left. Lime and the nitrates work down into the soil and may be applied on top or near the surface of the ground.

For the profitable growing of all kinds of leguminous plants the use of lime has become necessary on nearly all soils, especially those in southern New York.

The use of salt on the land is practiced by some farmers, although on many crops its benefit is very doubtful. The results obtained from its use could, in many cases, be more economically obtained by lime or other substances. Often its application is clearly detrimental. Five hundred pounds an acre should be the maximum used.

Whenever a farmer applies any such material he should always leave a check and carefully note results. In this way he can determine for himself whether or not it was a profitable investment.

A SHORT TREATISE ON ALFALFA

JAMES A. D. S. FINDLAY

Farmers' Institute Lecturer

In writing this short article on alfalfa it is not merely to reiterate an oft-repeated story, but to try to stimulate to action that farmer who knows the great value of the alfalfa crop on every farm; more especially the dairy farmer who, though knowing, never as yet has grown an acre.

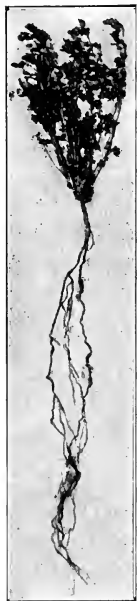


FIG. 115. ALFALFA PLANT
Note the length
of roots

First, let me try to interest the reader in the great value of alfalfa. It contains within a fourth as much nutriment as the best bran, which is worth about \$25 per ton. Since we can readily grow from three to five tons per acre each season, and as we all have to buy bran or its equivalent for our cattle, consider the saving to the man who grows this valuable plant.

Alfalfa contains about three times as much protein as our best timothy hay and we get, on an average, twice the crop annually. Thus we can produce at least six times more protein per acre with alfalfa than with our best grasses. Someone may say, "clover is just as good," but it is not. Let us grant that it is as good for the first cutting — the life of the clover ends there in the great majority of cases. Alfalfa will grow for years, and each year do better than the previous, since each year the roots go deeper, thus being in better condition to withstand the very hot, dry weather which the eastern farmers have had to contend with for the past four years.

The writer cut a splendid crop early in June (a little late) and at this writing — late July — is harvesting a fine second crop, despite the fact that scarcely any rain has fallen during the past six weeks.

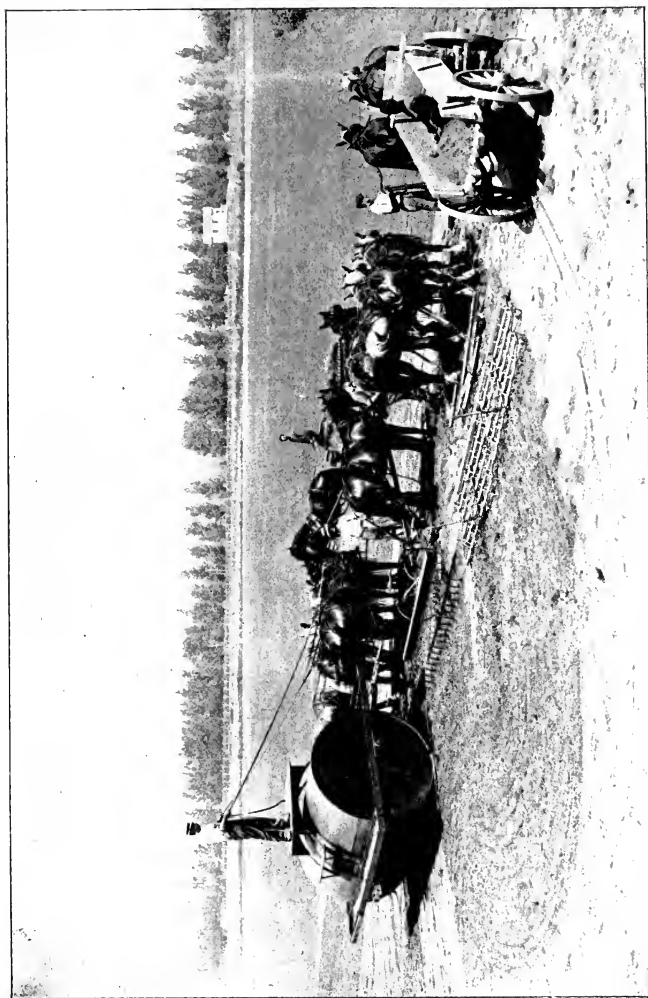


FIG. 116. SEEDING ALFALFA, ADIRONDACK FARMS, GLENS FALLS, N. Y.

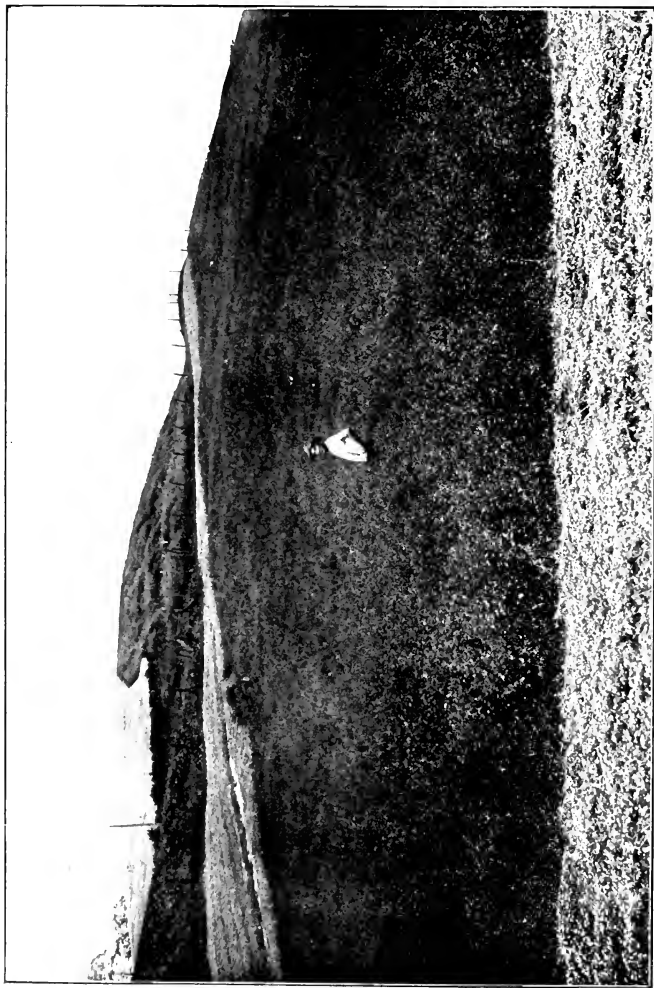


FIG. 117. FIELD OF ALFALEA, SECOND CUTTING SEPTEMBER. GROWN BY CHARLES GARRITY, COHUES, N. Y.

The cost of establishing alfalfa seems to turn many away from trying to grow the plant. I will say a few words about this so-called cost.

To grow alfalfa, the land should be reasonably dry. We know well that nothing will thrive with wet feet, so if the land should have an excess of moisture, drain it. Drains placed forty feet apart and from two and one-half to three feet deep will make the average farm dry enough for growing any crop.

If the land needs draining, do not charge the cost up to the alfalfa crop, because this would have to be done before any other crop could be successfully grown. Therefore, let us call the cost for draining permanent improvement.

Two tons of burned limestone to each acre will cost \$10.50; inoculation, \$1.50; 500 pounds of 4-8-10 fertilizer, \$7.50, and 20 pounds of seed at about twenty cents, \$4. This amounts to \$23.50 — a small sum per acre to grow a crop that will yield from \$75 to \$125 per acre for several consecutive years.

The land should be thoroughly plowed and harrowed two or three times before sowing, and the seed sown not later than the first week in August; although it has been successfully grown on my farm when sown as late as September 7.

Last year on May 20, I cut four acres of alfalfa for hay. The land was plowed at once and planted with corn, producing a fine crop. This was cut the first of September, and the land plowed and sowed to alfalfa September 7. This year we cut a splendid crop June 11, and the second crop will be cut before August 1. The past May, I cut the alfalfa from six acres, plowed and planted to corn. To-day, July 28, the corn is over eight feet high. Soy beans were planted with it and the vines are over two feet high.

Alfalfa is a great crop for soiling, coming earlier in May than any other crop we can sow. It is a good crop to precede either corn or potatoes. Alfalfa will grow on some field on almost any farm I have ever seen. Even on the white shore sands of New Jersey it is flourishing. On the tenth of June just past I saw the owner of this alfalfa field. He told me he had sold his entire crop of alfalfa at \$20 per ton in the field, and hoped to cut it three times more this year. The field on which this alfalfa grows was the

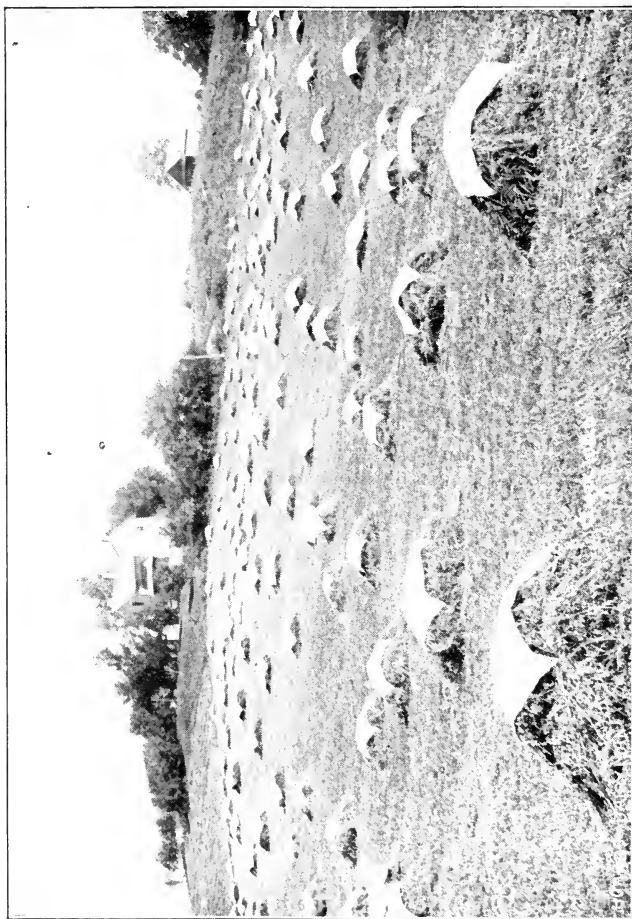


FIG. 118. ALFALFA IN COCKS

The hay cap, made from a sheeting or canvas, protects the alfalfa hay from rain and sun, neither of which is conducive to good hay. The best quality hay is cured in the shade

poorest piece of land I have ever seen, proving positively that alfalfa can be grown on any farm. However, I prefer good heavy land, thoroughly tile drained.

In June, I put alfalfa from 25 acres in the silo and am feeding 80 cows the finest silage I have ever seen, and they are giving twenty cans of milk. Most of these cows have been milking all winter and 27 of them are two-year-olds.

We are feeding peas and oats, alfalfa silage and hay, together with 200 pounds dried grains, 100 pounds of meal and 100 pounds of the best middlings daily. This produces milk at a very small price per quart so far as purchased feed is concerned. I have 45 acres of the legume now and hope to sow 25 acres more next month.

The Department of Agriculture is bending every energy to encourage farmers to grow alfalfa, and I wish to urge every New York State farmer to aid in placing the Empire State first in the production of this crop as it is first in five or six other farm products.

POTATO GROWING

GEORGE H. HYDE

Farmers' Institute Lecturer

Four leading factors essential to a successful potato crop are: Good seed, soil adapted to potato raising, thorough cultivation and generous spraying.

We will take up this most important subject to the farmers of the State of New York under the above headings.

SEED SELECTION AND TREATMENT

I will not discuss pedigreed potato seed, although I believe it is essential to the best success in potato growing. Few farmers are so situated that they can give the time necessary to carry on a thorough system of breeding. I would advise farmers, where possible, to obtain such seed even at what may seem an exorbitant price. All potato growers can improve their seed by careful selection of sound, mature, medium-sized tubers. In cutting seed my practice has been to quarter the potato, being careful to have at least two thrifty eyes in each quarter. If there is any indication of scab, treat the seed with formalin dip. That of United States standard of purity (40 per cent.) may be obtained at almost any drug store. One pint is added to a barrel containing thirty gallons of water. The tubers in sacks, cut or uncut, are immersed in this solution for two hours when they are removed and are then ready to plant or cut.

PREPARATION OF SOIL AND FERTILIZERS

The ideal soil for potatoes is a clay loam with a clover sod, but we do not all have that. Very often a timothy sod which has been well exhausted of its humus is used. Under these conditions I advise plowing under twelve to fifteen loads of average barn manure to the acre, plowing not *less* than six inches deep, immediately following the plow with roller and then harrow; this treatment conserves moisture. After thoroughly fitting the

soil — and that means making as fine a seed bed as possible — we are ready for planting. I have been asked how many times one should harrow. I can not answer definitely, since under some conditions it requires many more times than under more favorable conditions. As the potato is a quick grower it must have plenty of available fertility. Four or five hundred pounds of 10-5 acid phosphate and muriate of potash should be thoroughly worked into the soil, and at planting time a 2-10 fertilizer is put into the rows. As our market calls for a medium, rather than a large potato, close planting is preferable, 12 to 14 inches in the row, and rows 3 feet apart. Begin cultivation before the potatoes are out of the ground and continue it as long as it is possible without too much damage to the foliage.

SPRAYING

Spraying should be done often and thorough. Begin as soon as the beetles begin to hatch, and continue it once a week, until the vines begin to die, using a 6-6-50 formula of bordeaux mixture. To control the bugs I add two pounds of paris green to the mixture, first making a paste of it and putting in the sprayer when about three quarters full. Never put the paris green in the sprayer dry. I want to impress upon all potato growers the value of spraying; I have proved it many times.

This subject which we have gone over hastily is of much more importance to New York State farmers than many seem to realize as potato growing is one of the best paying propositions.



FIG. 119. EIGHT-ROWED YELLOW FLINT CORN, GROWN ON FARM OF B. COOPER ICE AND COAL CO., TROY, N. Y.

CORN

JARED VAN WAGENEN, JR.

Farmers' Institute Conductor

"My chief regret in not visiting America is that I shall die without beholding what I conceive to be the most superb crop that grows, as it is, in itself, the most valuable." Sir John B. Lawes, Pioneer of Agricultural Experimenters.

HISTORY

Corn is noteworthy as being one of the few important cultivated plants of American origin. Most of the plants of our farms, gardens and orchards were known centuries before the discovery of America, but tobacco, potatoes, pumpkins and squashes, some species of beans, the tomato, and most important of all — the maize — are the contributions of the new world to the old. Corn is probably of tropical or sub-tropical origin and has doubtless been much modified from the wild state, but the American Indian grew it through a vast extent of territory from Nova Scotia throughout much of South America, and in New York State it was grown to a surprising extent. When the first white men came to Ithaca in 1789, there were then 300 acres of "ancient maize lands" on the fertile flats at the head of the lake. The white man very quickly adopted its cultivation from the Indian and today it is the one great cereal that gives the American farmer his pre-eminent place in the world.

VARIETIES

Botanically maize belongs to the great grass family. It is merely a gigantic grass with the somewhat unusual character of bearing the fertile flowers — the silk — on the side of the stalk, while the pistillate flowers — the tassels — are borne on top. Botanists recognize four great types or sub-species of corn, and many varieties. These are the dent corn, typical of the warmer areas and the great central basin; the flint corn found especially

in the North Atlantic States; the sweet corn of our gardens which has sweet, tender, wrinkled kernels because it stores its food supply as glucose rather than starch, and the popcorn with its intensely hard kernels dear to the heart of the small boy.



FIG. 120. EIGHT-ROWED
YELLOW FLINT CORN

There are the four types in cultivation, but the different varieties vary through a wonderful range of size and season of maturity. Corn is especially interesting from the standpoint of the plant breeder because it is a plastic plant; namely, it adapts itself very rapidly to changed environment.

CLIMATIC REQUIREMENTS

So far as climatic requirements of corn are concerned, two fundamental facts are to be noted: First, that corn is by origin a sub-tropical plant reaching its best development only with high summer temperatures; secondly, that it requires a rather abundant summer rainfall. It has been stated that the optimum or best temperature for corn growth is about 93 Fahrenheit—a temperature reached on only a very few days during the summer. New York State lies north of the real corn belt, and on some of the highest lands of the state it seems probable that it is wiser to put the main effort of the farm on the production of grass rather than corn. Corn can use a great deal of water, and during normal seasons the crop generally suffers at some period. We should raise better corn if we could have not less than fourteen inches of rainfall during the three midsummer months. This is a matter beyond control except so far as the deficiency can be helped out by proper soil preparation and cultural methods.

The value of the corn crop is far and away the greatest of any of our cereals, averaging more than two and one-half billions bushels yearly, or more than four times all our wheat, three and one-half times our oats, and in value about twice all our hay.

About 80 per cent. of the world's corn is grown in the United States; Argentina and South Eastern Europe being next in importance. It is the one pre-eminent crop of America.



FIG. 121. LEAMING CORN, THIRTEEN FEET HIGH, GROWN BY GEORGE DUNHAM, SCHAGHTICOKE, N. Y.

CULTURAL METHODS

So far as soil is concerned, corn is a cosmopolitan plant; it will grow on almost any soil and it is successfully produced on soils ranging from glacial drift clay to sands that blow in the wind. The ideal is alluvial river valley soil with good natural drainage, and plenty of plant food and organic matter, such as is found in the corn belt states of the Mississippi basin.

In some sections of the West, corn is grown year after year on the same land, but it is a wiser system to grow it in rotation with

grass and other grains. It is especially adapted to sod, and by common consent in New York State, corn is grown on the old meadows and is followed usually by oats — sometimes by wheat. There is no doubt that this method is sound practice.



FIG. 122. SELECTION OF SEED
CORN FROM STANDING CORN

The importance of good seed is a matter that in the past has often been neglected. Systematic seed selection of ears of the desired type is the ideal, but at any rate, there is no work ever done on the farm that will give as big returns as to gather the seed corn early in the autumn before severe frosts, and promptly dry — preferably with artificial heat, — then keeping in a dry and frostless place. The matter of the quality of the seed is not infrequently the difference between success and failure.

In the West, corn is almost always planted in check-rows and worked both ways. Since the coming of the silo to New York State, it has become the

almost universal custom to plant in drills about three and one-half feet apart and work only one way. It is not a vital matter if corn is in hills or drills. The real question is in securing clean culture and a good surface dust mulch, and this can best be done by check-rowing it when weeds or quack grass are bad.

Cultivation can not be overdone, the three main reasons being to kill weeds, to prevent the evaporation of water and to liberate plant food. Still, root pruning is to be avoided and the safe rule is to run the cultivator close to the plant and deep early in the season and very shallow later on. Cultivation may profitably be kept up as long as it is possible to get a horse through the rows.

HARVESTING

In much of New York State the husking of corn has fallen into disuse and the whole crop is being handled through the silo—a change that is in the direction of economy and efficiency. The most common mistake is to ensilo while still too immature. The proper period is when the earlier ears are dented and the lower leaves are turning yellow, for these are the signs of maturity in the corn plant. Some of the medium dent varieties like *Pride of the North* and *Leaming* are best adapted for silo purposes in New York, but for husking it will be well to cling to our old State corn, the early flints which by long years have become adapted to our climate.

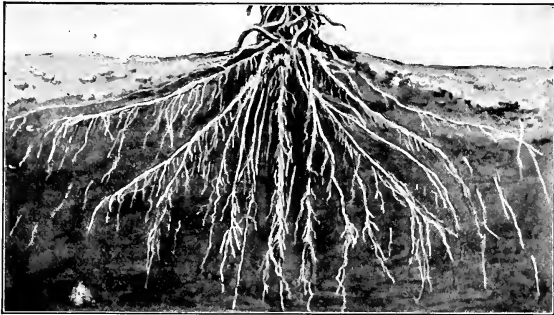


FIG. 123. ROOT DISTRIBUTION OF CORN AT SILKING TIME

INSECTS AND DISEASE

Fortunately and strangely, corn has developed few insect pests and only one fungous trouble. It has no enemy so serious as smut and rust in oats and wheat, or the Hessian fly. Smut in corn is a fungus rarely prevalent enough to do serious damage. The large white grub—the larva of the June beetle—is the most serious insect enemy in New York. Occasionally cut-worms and rarely grass-hoppers do some damage. Frost and drought still remain its main foe.

FEEDING

Corn as an animal food has one serious fault; namely, it carries such a small amount of protein in comparison with the starch and fat. The lesson of this is that alfalfa, clover and other legumes, together with nitrogenous by-products, must be fed in combination with it for best results.

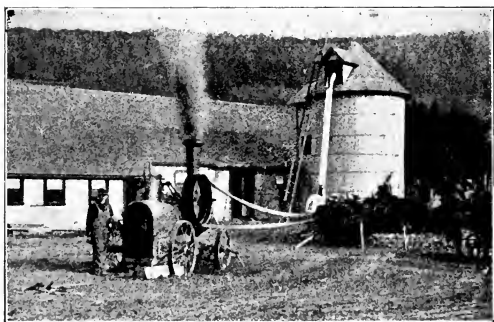


FIG. 124. FILLING A SILO WITH CORN

SPECIFICATIONS FOR SUCCESSFUL FRUIT-GROWING

PROFESSOR U. P. HEDRICK

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THE SITE

All subsequent efforts fail if a mistake is made in selecting the site for operations. In growing fruit for the market certain economic considerations imperatively demand attention; as distance to market, means of transportation, labor, storage, competition, disposition of by-products, cost of production, and over-production. Any of these may prove a determinant of success. "The weakest goes to the wall" applies in the business of growing fruit as well as in other business enterprises. In growing fruit for home use, these economic factors may be ignored. There are natural factors, however, which must be observed in growing fruit for either home or market.

The first of these is latitude. A man must select fruits, and even more particularly varieties, with reference to latitude and its equivalent, altitude. It is easy enough to select the fruit for a region in a certain altitude or latitude but it is far from easy to select the varieties of a particular fruit. Thus, the Ben Davis, Winesap, Romanite and York Imperial groups of apples belong in southern latitudes, while the Concord grape and its seventy or more named offspring belong to the North. So with all varieties of our fruits; they are either northerners or southerners and should be grown where they belong. Still the metes and bounds of latitude may be set aside by such local modifications as hills, valleys, bodies of water, direction of winds and distribution of sunshine.

SOILS

The soil largely determines the value of a location for a fruit plantation. Special fruits have special soil adaptations: The peach grows on sand; the plum on clay; apples and pears on loams. Individual varieties of any fruit also do better in some soils than in others. The fruit-grower must discover what these preferences

are. The chemist can help but little here; in most cases an actual test in the field is the only way of knowing whether a variety will or will not thrive in a soil. One property of the soil is too often neglected; namely, its heat-retaining properties. Some fruits, as the peach and the grape, require warm soils; apples and pears will thrive in cooler lands, but, in general, a cold, heavy, close soil is a poor one for any fruit.

VARIETIES

What varieties shall I plant? This question we have touched upon in previous paragraphs and it only remains here to be said that out of the thousands of varieties of the several fruits even the few best ones may be most readily characterized by their faults — showing how necessary it is to make careful choice of varieties. An intimate first-hand knowledge of varieties in the planter's own locality is the only way to become competent to choose the sorts to plant. Consideration will in most cases lead him to choose standard varieties.

TREES

It is as difficult to select trees as it is to make a choice of varieties. Trees grown near home are somewhat better than those brought from a distance. Every precaution should be taken in buying to insure trees true to name and free from pests. Other things being equal, a short, stocky tree is better than a tall, spindling one; one with many branches, better than one with few; and always the root system should be well developed.

“ PEDIGREED ” TREES

The idea is current that fruits can be improved by bud-selection. It is held that the variations in fruit, tree, productiveness, vigor and hardiness to be found in varieties of fruit, can be reproduced by taking cions or buds from the plants possessing the variations. Nurserymen are putting this theory in practice and trees are now offered for sale with a “ pedigree ” to show that they came from “ good ” ancestry. But there is no evidence that any sort of fruits has come into existence by continuous selection; that any variety has been improved through the cumulative action of selection. No

experimental evidence has been offered to prove that varieties of fruit can be changed in the least by continuous bud-selection. Fruit-growers should steer clear of "pedigreed stock" and "improved strains" of varieties until the new production can be seen somewhere by competent judges growing side by side with the parents.

STOCKS

Apples may be bought upon Paradise, Doucin, or homegrown or French-grown standard stocks. The first two named are suitable only for the amateur, and, of the standards, those on the foreign seedlings are usually much the better. Pears are grown as standards on French seedlings or as dwarfs on the Angers quince.



FIG. 125. A WELL-TILLED ORCHARD

The dwarfs are gradually going out of vogue. The peach should be worked upon seedlings from southern pits and not upon those from cannery seeds. Sour or sweet cherries on Mazzard stock are far superior to those on the Mahaleb stock. Plums are grown upon several stocks and no one seems to know which are the best for the several species of this fruit, the different types of soil, and the hundreds of varieties.

THE PLAN

How the orchard is to be laid out — in squares, quincunxes, hexagons, with or without fillers, and at what distances apart? Planting in squares is best because it permits orchard operations to be carried on most readily. Both roots and branches will utilize all of the space. Fillers of fruits other than varieties of the same species as the permanent trees are not desirable, since they greatly complicate orchard operations. Fillers of quick bearing varieties of the same fruit, especially the apple, may often be used to advantage. There should be as many "outside rows" as possible. That is, the trees should be far enough apart for each to develop in full its individuality, as the trees on the outside of the orchard produce most fruit, since they get most air, sunshine, wind, moisture and food.

"IMPOTENCY"

Fruit does not set in this region for the most part because of frosts, cold weather, rains and heavy winds at blooming time; but still there are some varieties of pears, apples, grapes and plums that are self-sterile. The remedy is mixed planting of varieties that bloom at the same time. It is important that the fruit of all of the varieties planted have value as it is not worth while to encumber land with a sort fit only for a pollinator. Contrary to a very general notion the fruits themselves are not greatly changed, if at all, by cross-pollination.

TIME AND AGE TO SET

There is a marked gain in setting varieties of apples late in the fall if the trees be two-year-olds. All other fruits and one-year-old apples should be set as early as possible in the spring. Two-year-old trees are usually to be preferred to those but one year old if they have been properly headed in the nursery. With the peach, one-year-old trees should always be planted.

DYNAMITE

There is little positive evidence to show that trees thrive better in holes made by using dynamite, and until such evidence is forth-

coming it is better that the holes be dug, as it is quite as probable that harm rather than good will be done through the use of explosives.

TOP-WORKING

The practice of setting a thrifty variety of apples or pears and grafting or budding a weaker or less healthy variety wanted, has many advocates. This top-working is probably a procedure worth while with a very few varieties. In general, however, the chances of getting malformed, lop-sided trees and of delaying the bearing period are so great that top-working cannot be recommended except for a very few sorts that seem difficult to grow on their own roots. They can be best top-worked in the nursery.

PRUNING AT TRANSPLANTING

We are ready to set the tree and the problem of pruning is before us. It is necessary to cut away part of the branches to enable the injured root system to supply the remaining branches with water. The less the roots are injured the less the top need be cut away. The common way is to cut back all of the branches. This, in many cases, is wrong. The top buds on a branch develop soonest and produce the largest leaves. A newly set tree will grow best if it can develop a large leaf surface before dry, hot weather sets in, and this it will do if some branches are left intact. Therefore, instead of shortening-in all branches, cut away some of the branches entirely. The tree so pruned will start growth and acquire vigor more quickly.

HEIGHT OF HEAD

A choice must be made at the start as to the height of the head. The choice should usually be for a low-headed tree for the reason that such a tree is more easily sprayed and pruned and the fruit more readily thinned and harvested; crop and tree are less subject to injury by wind; the trunk is less liable to injury by sunscald, winter-killing and parasites; the top is more quickly formed and the low-headed tree soonest bears fruit. No advantage as to cultivation is gained by either method over the other, as a well trained tree with a low head, in which the branches ascend obliquely, permits the cultivator to come sufficiently near the tree. By low-headed is meant a distance from earth to the first limb of from one

to two feet. The peach may be headed at the lower distance, the plum, pear and cherry somewhat higher, while the apple should approach the upper limit.

FORM OF HEAD

Two general types of top are open to choice; the vase form or open-centered tree, and the globe or close-centered tree. In the first the framework of the tree consists of a short trunk surmounted by four or five main branches ascending obliquely. In the close-centered tree the trunk is continued above the branches, forming



FIG. 126. A WELL-PRUNED SWEET CHERRY ORCHARD

the center of the tree. There are several modifications of each of these. In this climate the open-headed, vase-formed tree is best for the peach and the close-centered two-story tree is best for all other fruits. Whatever the form, care should be taken that the lowest branches are longest, so that the greatest possible leaf-surface will be exposed to the sun and light.

PRUNING FOR WOOD

For several years after planting, the peach alone excepted, fruit trees need to be pruned only to train the tree. Just how much to prune young trees depends upon the fruit, the variety, the soil and the climate. Fruit-growers usually prune trees too much, thereby increasing the growth of wood and delaying the fruiting of the plant. If trees were originally well selected, all that is needed is to remove an occasional branch which starts out in the wrong place — the sooner done the better — and to take out dead, injured or crossed limbs. The peach, some plums and some pears may need heading-in, and a weak or sickly tree may require somewhat more severe pruning.

If a tree is bearing many small fruits, if the top contains dead or dying branches, or if the seasonal growth is short and scant, it may be taken for granted that the tree lacks vigor; or, in old trees, is passing into decrepitude. Such trees may usually be rejuvenated by judicious pruning. In professional terms the tree must be “pruned for wood.” Such pruning consists in cutting back a considerable number of branches and in wholly removing others. In pruning for wood the following rules are usually applicable:

Weak-growing varieties may always be pruned generously; strong-growing kinds, lightly.

Varieties which branch freely need little pruning. Those having unbranching limbs should be pruned closely.

In cool, damp climates trees run to wood and need little pruning. In hot, dry climates they need much pruning.

Rich, deep soils favor growth; prune trees in such soils lightly. In shallow, sandy soils, trees produce short shoots, and the wood should be closely cut.

PRUNING FOR FRUIT

A barren tree can sometimes be made to bear fruit by proper pruning. Not infrequently barrenness is caused by over-manuring or over-stimulation of some kind, because of which the number of shoots and leaves are greatly increased, but flower buds do not form. This over-production of wood and leaf can sometimes be stopped by breaking or cutting off the greater portion of the season's growth in the summer. Summer pruning is a weakening process and in this climate may greatly decrease the vigor of

the plants if frequently resorted to. The practice is neither common nor often necessary in this state except in the case of dwarf apples and pears.

PRUNE ACCORDING TO HABIT

In pruning, the habit of the tree must always be considered. When trees have a spreading, drooping, or long, slender habit of growth, prune to buds that point upward or to the center of the plant. If the habit be upright and dense, cut to lower or outer buds and so spread the compact top. The "off-year" habit of bearing is intensified by spasmodic and severe pruning. Prune biennial bearers rather conservatively and early. The heads of all young trees may be left fairly dense, for when the trees come in bearing, the weight of the crop opens the head; meanwhile, by saving the foliage you have obtained a larger trunk and more bearing wood.



FIG. 127. A WELL-HEADED APPLE TREE

HEADING-IN

Heading-in makes the top of a tree thicker and broader. There are but few orchards or even trees that do not need more or less

heading-in at some time in their history. But in our climate this form of pruning is practiced only with peaches and some plums, and is but little needed with other fruits. In winter pruning, the cutting back of exceedingly long branches for the thickening of the top of occasional trees or varieties is the exception rather than the rule. Peaches and some plums bear fruit on the wood of the past season. The crop is borne progressively away from the trunk. It is necessary to head in these fruits to keep the bearing wood near the trunk. Apples, pears, most plums, and cherries are borne on spurs from wood two or more years old, and, therefore, with these heading-in is not a regular practice.

SUCKERS

When a tree is severely pruned a growth of long, vertical shoots with few leaves often follows — suckers or water sprouts. Since the sparseness of foliage prevents the shoots from elaborating food they appropriate it from the parts upon which they grow. Suckers are, therefore, parasites, and should be removed whenever and wherever found. Occasionally they may be used in the development of normal branches, though their value for this purpose is small.

THE CUT

The cut in pruning should always be made parallel with the trunk, as close as possible, and just beyond a healthy lateral branch. The reason for so cutting is plain. The lateral branch is stimulated to produce a great number of leaves which assimilate sap. This elaborated food passes back through the inner bark near the newly made cut and the wound quickly calluses and heals because it thus has access to an abundant supply of food.

Wounds over three inches in diameter seldom heal; decay sets in and there soon follow rotten wood, a hollow branch and a diseased tree. The life of a tree is endangered whenever a large branch is removed, and such an amputation should be made only under dire necessity. One of the secrets of the healing of large wounds is to cut close to the trunk, and no matter how large a wound may be it is better than leaving a projecting stub. The chances for healing with a large wound are materially increased

by a coating of thick lead paint to protect the cut surface from evaporation and moisture.

TIME TO PRUNE

The best time to prune is late winter before the sap flows. The objection to early winter pruning is that there may be injury to the tissues near the wound from cold or from checking. Late spring pruning results in loss of sap and the fluids run down the bark and keep it wet and sticky, making a suitable place for the spores or various rot fungi so that decay may set in. In practice it is often found necessary to prune from the time leaves drop until they are well started in the spring.

CULTIVATION

Cultivation is generally practiced with all fruits except the apple. Some claim that this fruit can be grown better in sod; in which case the grass may be cut as a mulch or it may be kept down by sheep, pigs or cattle. The New York Agricultural Experiment Station has two experiments to test sod and cultivation. The following table shows the outcome of one of these experiments at the end of five years:

EXPENSE AND INCOME FROM A SOD-MULCHED AND A TILLED ORCHARD

Year	Sod plat — 118 trees				Tilled plat — 121 trees			
	Cut- ting grass	Har- vesting crop	Total expense	Net income	Culti- vation	Harvest- ing crop	Total expense	Net income
1904.....	\$19.99	\$219.25	\$327.14	\$225.76	\$33.75	\$210.90	\$332.55	\$185.34
1905.....	7.46	82.89	166.47	330.28	48.71	96.85	221.68	355.60
1906.....	3.36	104.30	186.29	154.96	30.30	231.80	340.73	392.42
1907.....	3.67	138.07	239.28	487.16	46.63	224.20	371.35	800.31
1908.....	6.14	173.43	246.88	353.86	36.67	338.59	447.82	723.41
Total...	\$40.62	\$717.94	\$1,166.06	\$1,552.03	\$196.06	\$1,102.34	\$1,714.13	\$2,457.08

Allowing 27.2 trees to the acre, these figures show that the average expense of production, including picking and marketing, was \$53.75 an acre annually under the sod-mulch system and \$76.06 under tillage, an advantage for the sod-mulch of \$22.31 an acre;

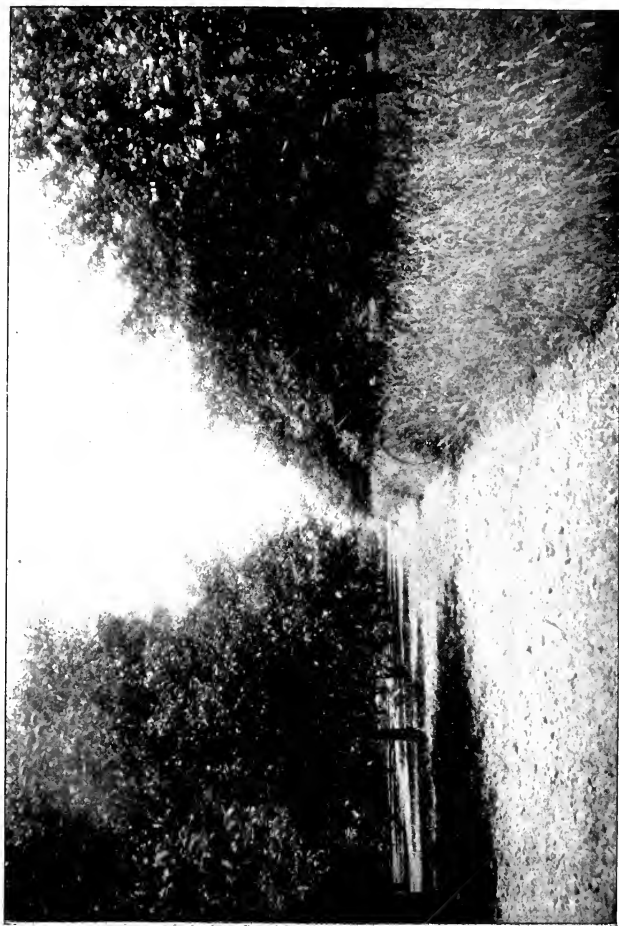


FIG. 123. TILLAGE VS. SOD-MULCH IN THE ALCUTER ORCHARD

but the *net income* from an acre in sod was \$71.52 and from an acre in tillage \$110.43, an advantage for tillage of \$38.91. That is, every dollar of the additional expenditure (\$22.31) made necessary for adopting the tillage method was not only returned but brought an extra \$1.74 of profits with it.

FERTILIZERS

Is it necessary to fertilize an apple orchard? In the average western New York tilled apple orchard, if it be well drained, well tilled and properly supplied with organic matter from stable manure or cover crops, commercial fertilizers are little needed. The exceptions will probably be found on sandy and gravelly soils deficient in potash or the phosphates, and subject to droughts; or on soils of such shallowness or of such mechanical texture as to limit the root range of the apple plant; or in soils so wet or so dry, or so devoid of humus, as to prevent proper biological activities in the soil. There are probably many apple orchards in New York that may be benefited by an application of one of the chief elements of fertility. Some may require two of the elements. Few, indeed, should require a complete fertilizer.

How may a fruit-grower know whether his trees need fertilizers? It may be assumed at once that if trees are vigorous, bearing well and making a fair amount of new wood each season, they need no additional plant food. If the trees are not in the healthful condition described, the logical thing to do is to look to the drainage, tillage and health of the trees first and the more expensive and less certain fertilization afterward.

As a last resort, fertilizers ought not to be used to rejuvenate trees unless the owner has obtained positive evidence that his soil is lacking in some of the elements of plant food. To obtain such evidence a fruit-grower should carry on a fertilizer experiment.

In making such a test, select a portion of the orchard as uniform as possible, both in soil and varieties. If available, use at least five trees for each plat and on different plats use fertilizers about as in this Station test: (1) Acid phosphate to give about 50 pounds of phosphoric acid to the acre, or 13 pounds of 14 per cent. phosphate to each tree if they stand 40 feet apart; (2) phosphate as above and muriate of potash to give 100 pounds of potash to the

acre, or 8 pounds of muriate per tree; (3) phosphate and muriate as above and nitrate of soda and dried blood to give 50 pounds of nitrogen per acre, or 13 pounds of medium grade dried blood and $3\frac{2}{3}$ pounds of nitrate of soda per tree. This nitrogen might also be supplied in six tons of good stable manure to the acre, or 400 pounds per tree; (4) this amount of stable manure should be applied on a fourth plat, and (5) a similar plat should be left unfertilized for a check. This experiment is much less laborious and complex than it looks, for the fertilizer combinations are built up one from another and the mixing can be done and quantities weighed out in winter when orchard work is not pressing.

The fertilizers should be applied in the spring as soon as the ground can be worked, spreading them about the trees over an area somewhat greater than that covered by the spread of the branches. Apply the manure before plowing, and the fertilizers immediately after it, harrowing them in. The experiment, to be conclusive, should run for several years and the crops should be carefully weighed or measured, giving due consideration to culls and wind-falls.

INTER-CROPS

The best modern practice permits the growing of hoed crops in an orchard until the trees come into bearing. If profitable disposition can be made of the product, truck crops are ideal for a young orchard. Of these peas and beans take less from the soil than other crops and may add a little nitrogen to it. But beside these, cabbage, potatoes, cucumbers or similar crops may be grown advantageously. Corn is the only farm crop permissible and is not as desirable as any of the truck crops named.

COVER CROPS

The best modern practice insists that a cover crop be sowed at the close of the season's cultivation, about August first, to be plowed under the next spring. Various crops may be sown alone or in combinations. The several purposes of a cover-crop — to cover the ground, and add humus and nitrogen — are usually best served by a combination crop. Of several that may be recommended, this Station prefers the following: On each acre sow one bushel of oats or barley and fifteen pounds of mammoth red clover or thirty pounds of winter vetch.

PESTS

Spraying is indispensable but the fruit-grower can so plant as to avoid some of the warfare with pests. Thus King, Roxbury and Northern Spy among apples are nearly free from scale as are the Kieffer, LeConte and Winter Nelis pears, Bradshaw and Field plums and all sour cherries. There are about thirty varieties of apples on the grounds of the New York Agricultural Experiment Station never injured by scab, as many more scarcely injured, and of course a large number that are badly injured. The Seckel Kieffer, Le Conte and Winter Nelis pears do not blight badly. A few plums are never attacked by black-knot and some peaches are almost immune to leaf curl. Now with these, and nearly all other pests, men who cannot or will not spray, the general farmer and the city suburbanite, for example, should plant varieties measurably immune to the most troublesome pests. Commercial fruit-growers must spray.

MICE AND RABBITS

It is necessary to protect young trees from mice and rabbits. The best protection against mice is a mound of earth about the tree several inches high, thrown up in late fall and removed in early spring. Wire netting is the best protection against rabbits. When injury has been done the trees can often be saved by bridge-grafting.

CONCLUSION

Fruit plants are various in kind and trees of one kind are often quite unlike because the conditions under which they are grown are dissimilar. It follows, then, that conditions must vary for every person who grows fruit and that there must, therefore, be more or less diverse ideals, diverse methods and diverse results. But certain forces, embraced in what we call "good care," have brought all fruits from the wild to their present state of domestication, and these forces modified and refined as we gain new knowledge, must be kept in constant operation.

THE GROWING OF PEACHES

CHARLES D. BARTON
Farmers' Institute Lecturer

The first essential in the production of peaches is a location adapted to the purpose. The peach tree has but one absolute requirement and that a well-drained soil. Successful commercial production, however, depends on the selection of a suitable location — a location which takes into consideration the probable conditions and circulation of the air surrounding the trees during the extreme cold weather and at the time of blooming. Such conditions are usually found where there is lower ground near, which furnishes a place for the heavier cold air to drain out of the orchard. Good air drainage is almost as important to the peach grower as good water drainage.

SELECTION OF TREES

The proper selection of the tree is another important factor in successful peach production. A good-sized, healthy, vigorous tree is most desirable, because these conditions in a tree as it comes from the nursery row indicate that it has in it the power to make a healthy, vigorous growth when planted in an orchard. While a small tree may sometimes develop well, its size alone indicates that it either has not had good care or the vitality of the stock from which it was produced has not been good.

FORM OF TREE

Of course in digging the larger tree a large percentage of its roots are destroyed. In order to re-establish the balance between the amount of leaf surface and the amount of feeding roots which this tree is to have during the first year in the orchard, we remove the lateral branches and the top, planting a plain stem about two feet long. Experience has shown that in case of dry weather we get a much better stand than if more leaf buds are left to develop.



FIG. 129. LOW-HEADED PEACH ORCHARD



FIG. 130. DIGGING OUT BORERS IN ABOVE PEACH ORCHARD. THIS SHOWS FULL RECOVERY OF TREES TO THEIR NATURAL POSITION AFTER HEAVY FRUITAGE

During the dormant season after the first year's growth we prune to establish the form of tree we desire. With us this is the open, bell-shaped tree, as near the ground as we can get it. We desire it as low as possible because it is more easily pruned, more readily sprayed and the fruit is more conveniently picked from the low tree. We like the open, bell-shape because it is the form of low tree which is up out of the way when we are cultivating in the spring. It protects the buds from late frosts and, when opened out by the weight of the crop places the fruit grown from those same buds out in the open, in the sun during the day and the cool air during the night, the two main factors in producing highly colored fruit.

PRUNING

To obtain this form we go to the tree that has had one year's growth, and select from three to five of the branches near the ground, the number varying somewhat according to variety. All branches above these are removed by cutting off the original stem just above the top one selected. This gives us the form of the tree and all future pruning is simply keeping this center open, removing all branches which turn down to the ground and keeping small branches thinned out to the proper thickness. During the second and third summers if the trees are making very vigorous growth some of the pruning is done in July. This is done to check wood growth and stimulate the formation of fruit buds. While making use of this valuable principle, it must be done with great care and judgment. It should never be done to a bearing tree, or a non-bearing tree that is not making a heavy, vigorous growth. In such cases, all pruning is done during the dormant season, thereby stimulating wood growth. A goodly amount of wood growth is always necessary, since all fruit is borne on the wood grown the previous year. On this account it is frequently necessary to do considerable winter cutting in old trees so as to produce enough new wood to keep up the bearing surface.

CULTURAL METHODS

During the first two years hoed crops such as tomatoes, potatoes, melons, peas and beans are planted among the trees and the fertilizers and cultivation given the hoed crops are sufficient to keep the trees growing vigorously. Leguminous cover crops

during the winter store nitrogen and humus in the soil and create good conditions for the production of maximum crops of fruit later.

The cultivation is planned to produce a quick, vigorous growth in the early season, then check growth in the late summer and allow the buds time to ripen before the cold weather comes. To obtain this we begin to cultivate just before the time of blooming and keep thoroughly cultivated for ten to twelve weeks, when the cover crop is sown. The exact amount of cultivation at each end of the season varies with the moisture conditions. The object is to maintain good moisture conditions until the fruit is well grown and then allow the tree to cease vigorous growth in order that we may have good, solid fruit and allow the buds to ripen.

FERTILIZERS

When the orchard comes to bearing, we plan to give all the fertilizer the trees can make use of. Experience has shown that an excess of phosphoric acid and potash does no harm. An excess of nitrogen, however, produces an overgrown, soft, sappy fruit which does not carry to market well, and is generally unsatisfactory to handle. If available in too great an abundance in the latter part of the season, it also produces a tender bud which does not stand the winter well. To meet these conditions without taking any chances of producing unsatisfactory results with the nitrogen and still use enough to produce large crops, we have adopted the plan of applying at the time of the first cultivation in the spring, an excess of the amount of phosphoric acid and potash which we think can be used. Then when the trees come into full leaf — usually the latter part of May — we apply nitrogen according to the needs of the tree as indicated by the color of the foliage. On good ground with plenty of leguminous cover crops, the color frequently indicates that there is enough nitrogen to produce the crop. If the foliage is not dark enough we then apply from one to two pounds of nitrate of soda per tree, spreading around as far as the branches reach and working in, always bearing in mind that too much nitrogen is worse than too little. We much prefer the nitrate to any other form because it is so quickly available, and we have waited until the tree has indicated the im-

mediate need for it. On the other hand, it is quickly used and is not there to produce sappy buds in the late summer.

INSECT ENEMIES

There are three insects which need attention. The peach-tree borer is kept in control by means of a thorough examination and digging out once a year, preferably in the fall. The San José scale has been controlled by thorough spraying with the winter strength of lime-sulphur wash, spraying with the wind and treating each tree from two directions. The plum cureulio has been troublesome for a few years past. A spray of two pounds arsenate of lead to fifty gallons of water immediately after the falling of the corolla and again after the calyx falls, has helped very much in lessening the damage caused by this insect.

DISEASES

Fungous troubles have been harder to overcome. Brown rot has been a serious menace both on the pistils at the time of blossoming and on the fruit at the time of ripening. The application of the scale spray within two weeks of the time of blossoming has prevented serious loss and has taken care of the leaf curl at the same time. The use of the Scott formula of "self-boiled" lime-sulphur immediately after the falling of the calyx, again two weeks later, and in the case of late varieties again four weeks before ripening, has prevented serious loss at the time of ripening, and has at the same time, entirely overcome the scab or freckles.

There is no known remedy for "yellows" and "little peach." Yellows seem to have been well controlled by digging out and burning as soon as discovered. The same treatment for little peach has kept it fairly well in check but has not overcome it as thoroughly as in the case of the yellows. There is strong evidence that neither of these diseases develop as quickly or spread as rapidly in a vigorous, strong orchard as in one that is neglected and poorly fertilized. Good cultivation, thorough spraying and liberal fertilization seem to be the keynote to success in peach production.

SOME INSECTS OF THE APPLE AND THEIR CONTROL

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Apple growing has become a highly specialized branch of agriculture. To bring an orchard into bearing, which is not only productive but profitable as well, is no small achievement. It is an undertaking that calls for skill and intelligence. From the time of planting, the requirements of the orchard must be carefully considered, and one does not have to be long on the road of experience before he realizes that a growing, fruitful planting makes many demands—has many needs which the wise grower will attempt to satisfy. There are problems of pruning to promote symmetry of form and fruitfulness and problems of cultivation and fertilization that make for growth and productiveness which must be solved according to one's individual knowledge, judgment and circumstances. And this is not all, for not only must the orchardist prune and cultivate and fertilize, but if he hopes for a reasonable measure of reward for his labors he must preserve the health of the trees and protect the growing fruit from inroads by destructive insects and diseases.

The successful management of a remunerative orchard calls then for constant balancing and discrimination of ideas. And it is the problem of the grower to select and to put into practice such teachings as seem most applicable to his own circumstances. These considerations apply with especial force to the subject under discussion, "How to combat the destructive insects of the apple orchard." Some growers seem unable to make much progress in their spraying operations while others with little experience in orcharding appear to be bewildered by the numbers of insects that infest this fruit and by the various details that enter into the selection and application of insecticides. However, the problem is not as difficult as it first appears. While the apple is subject to the attacks of many insects, the number of species of vital im-

portance is really comparatively few. With these the orchardist should become acquainted — to the extent at least of being familiar with their appearances, habits and the stages most sensitive to treatment. Such knowledge is a great advantage, for thus fortified, it is not only possible to anticipate outbreaks by injurious insects, but if compelled to resort to repressive measures one may work so much more effectively. In warfare with insects “knowledge is power” as in other matters. “To be forewarned is indeed to be forearmed.” “Thrice armed is he who hath his quarrel just; and four times is he who gets his blow in fust.”

Formidable as is the list of insecticides, the spraying of apples is now largely limited to the lime-sulphur solution, which may also be used as the carrier of other useful materials, as arsenate of lead and tobacco extract. So it is possible by combining such insecticides to “Hit many birds with one stone” and to limit spraying to a few treatments.

This discussion has been prepared with the view of affording practical aid to the apple grower in his contest with destructive insects. The more important species only are considered, which should be recognizable by the accompanying illustrations. There is also included a brief outline of the principal sprayings of the apple. However, it should be understood that insects and diseases vary greatly in destructiveness from one year to another according to seasonal conditions. This spraying schedule should therefore be used with discretion. If a disease or insect is of special importance in one's plantings the grower should familiarize himself with special publications on the subject.

SOME INSECTS OF THE APPLE

For the sake of clearness a number of the more important insects attacking the apple are discussed in the following order:

- | | |
|------------------------------|------------------------|
| Insects attacking the trunk: | The Round-Headed Borer |
| | The Flat-Headed Borer |
| Insects incrusting the bark: | The San José Scale |
| | The Oyster-Shell Scale |
| | The Scurfy Scale |

Insects attacking the fruit:	The Codling Moth
	The Lesser Apple Worm
	The Green Fruit-Worm
	The Red Bugs
	The Apple Maggot
Insects attacking the foliage:	The Blister Mite
	The Apple Aphides
	Various Caterpillars

INSECTS THAT ATTACK THE TRUNKS OF APPLE TREES

THE APPLE TREE BORER

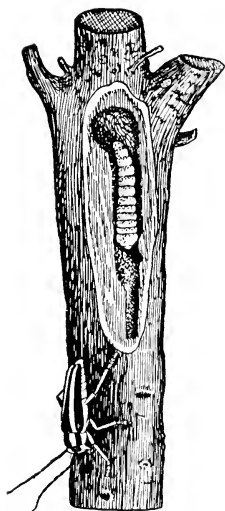


FIG. 131. THE ROUND-HEADED APPLE TREE BORER

These insects are very destructive pests and do much more damage than the average grower appreciates. The injuries are largely caused by the grubs or larvae which work beneath the bark. If the burrows or channels of the insects are numerous the bark may be girdled, resulting in the decline and death of the trees. Recent investigations have shown that insects play an important role as disseminators of diseases. It is now believed that various wood-boring insects are in part responsible for cankers and other disorders of the trunks of fruit trees. The wounds and holes in the bark produced by these pests certainly make it possible for disease-producing organisms to establish themselves in the tree.

The adult round-headed borer is a handsome beetle about three-quarters inch long, light brown in color, with two longitudinal stripes down the back. The adult of the associated species is dull metallic brown in color and about one-half inch in length. The life histories are quite similar. The eggs are deposited in crevices or slits in the bark, and from these there develops the pale grubs which may be observed working beneath the bark, and are familiar to most growers.

Treatment.—The trees, especially in young plantings, should be inspected every fall and spring for discolored areas in the bark, or for wounds from which there is exudation of sap, or for sawdust-like castings. When such are detected cut out the borers by means of a strong, sharp knife. Grubs buried deeply in the heart-wood may sometimes be destroyed by probing with a piece of wire or by injecting carbon bisulphide into the burrows, when the openings, after the application, should be immediately sealed with moistened clay or putty. As unthrifty trees are more susceptible to attack, the needs of the orchard in other respects should be given careful attention for the purpose of stimulating the trees to outgrow the injuries and of warding off subsequent attacks.

INSECTS INCRUSTING THE BARK OF APPLE TREES

SOME COMMON SCALE INSECTS

The scales constitute a peculiar group of insects which differ in many ways from the active and highly-colored forms usually familiar to the casual observer. They are generally very inconspicuous because of their small size, dull colors and sedentary habits. When abundant they appear as a scurfy deposit upon the bark, which is dark grey, whitish or brown in color, depending upon the species. If the insects are numerous the bark appears rough, scaly and unhealthy because of the obscuring of its natural color and polish. If one of the filmy bodies of the San José scale is raised carefully with the point of a pin or of a knife blade a small grub will be discovered beneath. This grub is the insect itself and the filmy or scurfy body above is its protective covering or scale, which, strange to say, is composed of the cast skins and a waxy substance from the insect's body. Hence the name "scale insect."

THE SAN JOSE SCALE

This species ranks as one of the worst pests of fruit trees. Besides the apple, it attacks the cherry, pear, peach, plum, currant—practically all our common orchard trees and bush fruits. It thrives also on many shade trees and ornamental shrubs.

Large numbers of this scale appear as a greyish, scurfy deposit, not unlike a coat of ashes. The bark appears rough and dull

instead of having a smooth and polished appearance. Branches that are infested with large numbers of the insect usually show dead twigs, and foliage is sparse. Infested leaves are often marked with red or purplish spots. The apples are rough,

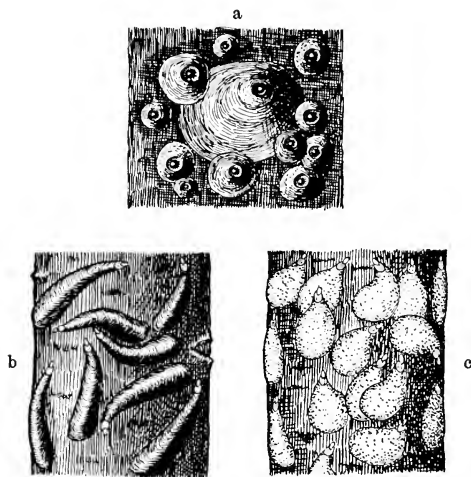


FIG. 132. COMMON SCALE INSECTS (much enlarged), (a) SAN JOSE SCALE, (b) OYSTER-SHELL SCALE, (c) SCURVY SCALE

scabby-like, spotted with red; the reddish discoloration being most noticeable around the margins of the scales. The wonderful power of reproduction of this species makes it the most formidable of our orchard scales.

THE OYSTER-SHELL SCALE

This appears as a brown scale about one-sixth of an inch long, closely resembling the color of the bark and somewhat like a long, narrow oyster-shell in shape. In some seasons the insects appear in such numbers that twigs and branches are literally covered, in which event the health and vigor of the tree is seriously impaired.

This species is commonly found on apple and pear. It attacks many other plants. It is reported to have caused severe injuries to mountain ash and horse-chestnut.

THE SCURFY SCALE

This somewhat resembles the oyster-shell scale, but is easily distinguished from it by its greater breadth and white color. When present in large numbers it is very conspicuous by its contrast with the dark bark. It is common upon apple, pear and quince.

REMEDIES

To combat the San José scale the grower should apply lime-sulphur solution late in the fall or preferably early in the spring just before the leaves commence to show. The concentrated solution testing 32° to 34° B. should be diluted in the proportion of one gallon to eight or nine gallons of water. Successive years' spraying with the lime-sulphur mixture as indicated above will also free the trees of the oyster-shell scale and the scurfy scale. These latter species may also be efficiently controlled by applying one pound of fish-oil soap dissolved in five gallons of water, or kerosene emulsion diluted with eight parts of water, about the middle of June as the young scales hatch.

INSECTS THAT ATTACK THE FRUIT

THE CODLING MOTH

The codling moth is responsible for "wormy" apples. It is one of the worst pests against which fruit growers have to contend and causes an immense yearly loss in the apple crop of this state.

The damage to the fruit is done by a worm or caterpillar of a small moth known as the codling moth. There are two broods of worms. The first brood appears in early summer, while the second brood is active during the late summer. The worms of the first brood are hatched from tiny disk-like eggs, laid on the trees by the parent moths, on or near young apples, hatching two or three weeks after the trees have blossomed. The young worm crawls to the blossom end of the apple and burrows into the interior of the young fruit, feeding as it goes. After feeding for two or three weeks the worm leaves the apple and spins a cocoon under the rough bark of the trees or under adjacent rubbish. Within this cocoon it changes to a pupa, and later to a moth, which is the codling moth of the second brood. In the latitude of Geneva the second brood of moths appears during the latter part of July

or early August. The late brood of worms is, during some seasons, more numerous than the first brood and is responsible for the increasing numbers of wormy apples as the time of picking approaches. These late worms spend the winter in cocoons as described and do not transform to moths until spring after the apple trees have blossomed.

Treatment.—Nearly all the codling-moth worms seek the blossom or calyx end of the young apple, where they feed before burrowing into the interior. The object in spraying is to coat this portion of the apple with poison so that the young worm may be destroyed at its first meal. The best time to apply the poison is

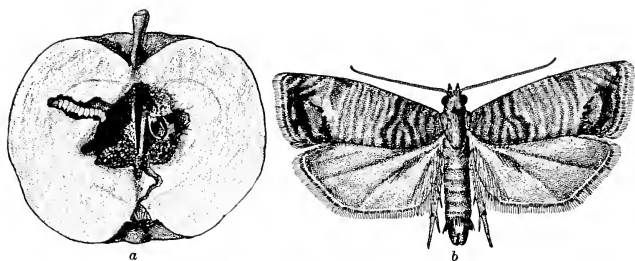


FIG. 133. CODLING MOTH WORK IN APPLE (a) AND ADULT MOTH (b)

after the blossoms have largely dropped and before the calyx cup has closed. Direct the nozzles so that the spray will be shot into the throat of every blossom or calyx cavity. This is the first and most important treatment for the codling moth. It is more efficient than all subsequent treatments and should never be omitted.

As worms hatch and burrow into the apples as long as three weeks after the falling of the blossoms, a second spraying two or three weeks later than the first treatment is practised by a few fruit growers. While this application undoubtedly kills many worms it is not made by orchardists generally unless apple scab threatens because of the lack of time and the pressure of other farm work. These two sprayings, as described, are the first and chief steps in the campaign against the first brood of worms.

The next step in point of effectiveness is to spray for the second brood of worms. The time to make this treatment is late in July

or early in August, according to the season. To ascertain the time for spraying examine the undersides of burlap bands about a few trees, selected for this purpose, for the appearance of empty pupa skins. These indicate that the second brood of moths is making its appearance, when spraying should commence in about a week. This treatment not only affords some protection from the codling moth but it may prove of much value in protecting the foliage against various caterpillars, and especially from late infections of apple scab.

Arsenate of lead is recommended as it is extremely poisonous to the young codling-moth worms and on drying is very evenly distributed. If it is properly made it is the most adhesive of spraying poisons, and does not generally cause burning of foliage. It is the only poison to use with lime-sulphur solution and should be employed in the proportions of two or three pounds to fifty gallons of water or dilute lime-sulphur solution.

THE LESSER APPLE WORM¹

The lesser apple worm is a native insect which feeds upon crab-apples and wild haws and has recently attracted attention because of its injury to apples. In some sections its work is equally important with that of the codling moth, to which it is similar in habits and nature of injury. The young caterpillars eat cavities or holes one-fourth to one-half inch deep into the flesh, usually about the calyx lobes.

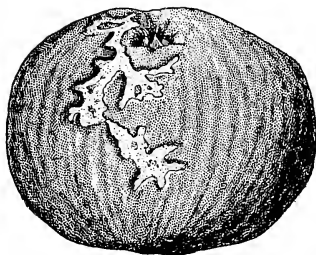


FIG. 134. WORK OF LESSER APPLE WORM

They may eat directly through the skin of the young fruit, but more commonly the calyx cavity is the place of entrance. A characteristic feature of their work is the winding blotch mine under the skin of the apple. The mines occur on the sides of the apples, especially where two are in contact or where an apple is touched by a leaf. Later in the season the injury to the blossom end is about the same, though there is a tendency on the part of the larva to penetrate deeper into the fruit, often to the

¹ From Geneva Circular 25.

core. The surface injury is rather more common, the larva eating out just under the skin large irregular winding or blotch mines. Larvae of this species apparently do not reach full development as early in the fall as those of the codling moth, and many find their way into barrels where they continue to feed, occasionally doing considerable damage. The larvae are small, flesh-colored caterpillars, measuring about three-eighths of an inch long and are easily confounded with those of the codling moth. The moth is about one-fourth inch long, generally of a rusty red color with grayish markings.

Treatment.—The insect is controlled by the same treatments as recommended for the codling moth.

GREEN FRUIT WORMS¹

These insects sometimes do serious injury by eating into the young apples. They also attack pears, plums, cherries, peaches and quinces. The full-grown caterpillars measure from an inch to

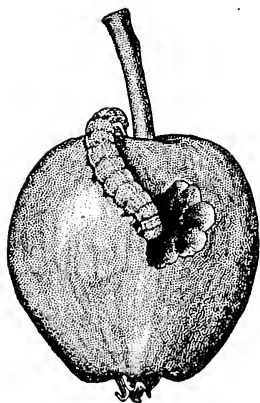


FIG. 135. THE GREEN FRUIT-WORM AND ITS WORK ON A YOUNG APPLE

nearly an inch and a half in length. They are green or yellowish-green in color with various irregular markings and stripes, the most prominent of the latter being a narrow, cream-colored one down the middle of the back and a wider one along each side. The caterpillars are most destructive during May, soon after the fruit has formed. They continue feeding until about the middle of June. They feed mostly at night, resting on the undersides of the leaves during the day.

When full grown they go into the ground, form a rough cocoon and pupate. The adults are dull-colored moths, measuring about two inches from tip to tip with the wings spread. They lay their eggs in the spring and the caterpillars appear during the early leafing period.

¹ From Geneva Circular 25.

Treatment.—These insects are difficult pests to combat when once they have acquired a taste for the young fruits. They are, however, much less destructive in orchards that are well sprayed each year and given careful attention in other respects. Observations indicate that the most satisfactory means of protecting the crop is thorough spraying with arsenicals before blossoming and after petals drop. Cultivation is unquestionably fatal to many of the pupae in the ground.

THE APPLE RED BUGS¹

These are small, brilliant red sucking insects that destroy or deform young fruit. The punctures of the tissues by the insects

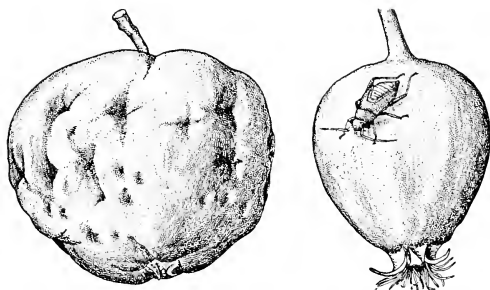


FIG. 136. A RED BUG AND ITS WORK ON APPLES

cause the apples to drop or shrivel upon the tree, or to become pitted and misshapened. The eggs of the red bug are inserted in the bark of the young wood and they hatch the following spring. The nymphs begin to appear soon after the leaves of the fruit buds open and hatching is practically completed by the time the blossoms open. The young nymphs feed upon the leaves until the fruit sets, after which they attack the fruit. The first indications of their presence is minute reddish spots on the terminal leaves which are caused by their feeding.

Treatment.—The insect may be controlled by spraying just before the blossoms open and again after the petals fall with nicotine extract (Black Leaf 40), using one pint of the extract and four pounds of soap to each 100 gallons of water. These treat-

¹ From Geneva Circular 25.

ments coincide with the second and third applications that are regularly made for scab and codling moth, and rather than make a special application, fruit-growers are advised to add the nicotine without the soap to the lime-sulphur and arsenate of lead. The presence of this insect in the orchard may be determined by placing dormant twigs of bearing wood in water in a warm room after March first, and if eggs of these insects are present, small active red bugs will appear which will attack the tender leaves.

THE APPLE MAGGOT¹

In addition to being called the apple maggot, the insect is also commonly known as the railroad worm because of the long, winding brownish channels made by the larvae or maggots in the fruit. The adult insects are flies. They appear in June and deposit eggs just under the skin of the fruit. These eggs hatch into maggots that burrow irregular channels through the fruit. Moderately infested fruit becomes rough and uneven due to the "stings" or egg punctures of the fly. Badly infested fruit falls early and the maggots enter the soil, where they remain until the fol-

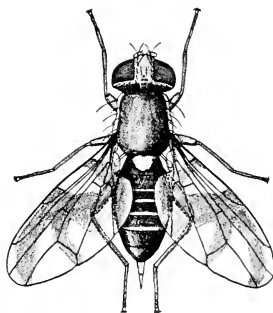


FIG. 137. ADULT OF APPLE MAGGOT

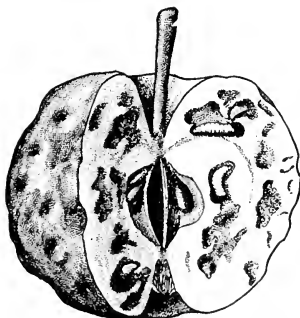


FIG. 138. WORK OF APPLE MAGGOT

lowing spring. While many varieties of apples are subject to attack, the injuries are more pronounced to certain sorts that mature in the summer and fall.

Treatment.—It has long been noticed that commercial orchards that are cultivated and thoroughly sprayed are as a rule free from injury by this maggot. Neglected orchards, particularly summer and fall varieties of apples, are susceptible to losses

¹ From Geneva Circular 25.

every year. This is especially true in localities where little attention is given to fruit-growing. In this lies a hint that thorough spraying and cultivation of orchards each year as practiced by our most successful growers are, perhaps, the most satisfactory means of avoiding injury by this pest. The only remedy that experience has shown to be effective in reducing the injury on badly-infested varieties is the destruction of windfalls, which is ordinarily accomplished by pasturing the orchard with hogs or sheep. Recently the use of poisoned bait has been recommended for the destruction of the fly. The method employed is to syringe the lower branches with a mixture of molasses one pint, arsenate of lead three ounces and water four gallons.

INSECTS THAT ATTACK THE FOLIAGE

THE BLISTER MITE

This has in recent years become an important pest of the apple. Its work is now quite common in plantings that are neglected or indifferently sprayed throughout the apple-growing sections of western New York. Destructive outbreaks of the pest have also been noted in orchards about Lake Champlain.

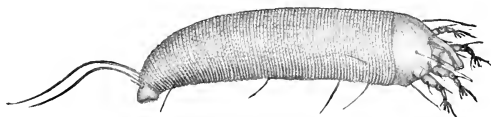


FIG. 139. THE BLISTER MITE (much enlarged)

The mite that is responsible for the injury to the foliage is a microscopical, vermiform creature as shown in fig. 139. The mites burrow into the leaves from below and the irritation they cause induces the growth of galls. These at first are greenish pimples with a more or less reddish tinge. The color strengthens as the galls increase in size, appearing as dead, corky areas of varying size. These galls or blisters on apple foliage resemble, in general effect, the spots produced by bordeaux when sprayed under unfavorable weather conditions, but the bordeaux spots are depressed or, at least, are not raised above the surface of the leaf, while the

mite galls are noticeably elevated. The galls also show one or more tiny openings — the tunnels or burrows made by the mites on entering and leaving the leaf. Upon the upper and lower surfaces of leaves, the mite-infested spots are brown, and are generally distributed about the base and margins of the leaf. The mites also injure the fruit and fruit stems, the evidences of their work showing at first as light-green pimples, which may later change to blister-like spots or pock marks. The mites spend the winter in the buds, usually under the second and third layers of bud scales. They frequently collect in colonies of fifty or more in little depressions in the scales and are more or less concealed and protected by the pubescence of the buds. As the buds burst, the mites move to the unfolding leaves in which they burrow and establish new colonies. In October the mites abandon the leaves and hide in the buds.

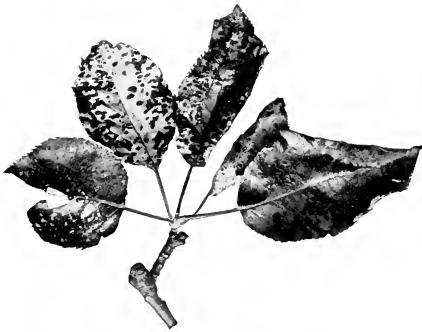


FIG. 140. THE WORK OF BLISTER MITE ON APPLE
FOLIAGE

Treatment.— This pest is efficiently combated by spraying the trees in the spring before the leaves appear with the lime-sulphur mixture. The concentrated lime-sulphur solution should be diluted in the proportions of one gallon of the solution testing 32 to 34° B. to ten or twelve gallons of water for the treatment of the mite alone; but if the scale is present on the trees the spray should be stronger, one gallon to eight or nine gallons of water.

THE APPLE APHIDES

Plant lice are among the most harmful pests of the apple. During recent years these insects have been very destructive in many orchards in the leading apple-growing sections of New York. The species of aphids which occur on this fruit are the green apple-aphis, the rosy apple-aphis, the European grain-aphis and



FIG. 141. APHIDES ON APPLE LEAF

the woolly apple-aphis. The forms most injurious to the foliage and fruit are the green apple-aphis and the rosy apple-aphis. The presence of these species on trees is indicated by curled leaves and the occurrence of a sweetish liquid called "honey dew," which may be observed during the month of June upon the leaves and fruits. The leaves later become blackened and unsightly owing

to a "black mold" which grows upon the honey dew. Ants are very fond of this liquid and are often attracted to the infested trees in considerable numbers.

The green aphid is a small, soft-bodied, sucking insect. For a short time after its appearance in the spring the aphid is wingless and of a dark green color. In about two weeks winged forms develop and spread by flight through the orchard. A number of broods are produced during the summer, and females of the last brood deposit minute green eggs about the bases of the buds and in crevices in the bark. These eggs later become shiny black in color, in which condition they remain until hatching takes place in the spring. As the buds begin to expand the eggs hatch and the young lice make their way in large numbers to the green ends of the buds. As opportunity is afforded the insects work into the interior of the buds and seek the protection given by the hairy growth of the unfolding leaves. As the leaves unfold the lice gather on the under surfaces and also on the fruits, causing curling of the leaves and pimply of the young apples. The extraction of the sap from the fruit stems causes a dwarfing of the young apples, while the injury to the leaves is often a serious drain on the vitality of the trees.

Treatment.—Newly-hatched lice are most susceptible to spraying because of their exposed positions at the tips of the buds. Close watch should be kept for them from the time the tips of the buds show green and during the period when the leaves are expanding. If the insects appear in goodly numbers spray the trees thoroughly with $\frac{3}{4}$ of a pint of "Black Leaf 40" and 3 pounds of soap to 100 gallons of water. It is important to spray early, for if the treatment is delayed the aphids are protected by the curled leaves and they are then practically immune to spraying. The tobacco extracts may be used in combination with lime-sulphur solution or bordeaux mixture, omitting the soap. Some growers combat the apple aphid successfully with kerosene emulsion diluted with 8 parts of water, or whale-oil soap in the proportion of 1 pound to 5 gallons of water. To obtain satisfactory results the spraying mixture should be applied in liberal quantities with high pressure, for only those insects are killed which are completely wetted with the spray.

SOME LEAF-EATING CATERPILLARS

A great variety of caterpillars feed on apple leaves, but of special importance in most fruit regions in New York are certain species, as the casebearers, bud moth and some leaf rollers.

THE CASEBEARERS, BUD MOTH AND LEAF ROLLERS

The pistol casebearer and the cigar casebearer are frequently troublesome in apple orchards. The life histories are very similar. The young caterpillars of the pistol casebearer live over winter in the little pistol-shaped cases of silk which are attached by one end to the twigs, usually near and sometimes on the buds. These cases measure about one-eighth of an inch in length and resemble the bark in color. Early in spring, a short time before the leaf buds burst, the hibernating casebearers become active. They attack the growing buds, gnawing the outer covering to feed on the tender tissues beneath. Later in the season they feed upon the interior tissues of the leaf in the same manner as a leaf miner. The larvae reach maturity and cease feeding about the middle of June, and moths appear in July. These deposit eggs from which larvae hatch. They feed upon the foliage in late summer and with the approach of winter attach their cases to the twigs.

The larva of the bud moth hibernates over winter under a tiny shelter on the young wood and in the spring it attacks the opening buds. Later, when the leaves and blossoms unfold, it seeks the clusters, forming a retreat in the webbed leaves. By reason of its destructiveness to buds and blossoms the bud moth is, during some seasons, a serious pest. The caterpillar is darkish red in color and pupates in June. The moth makes its appearance about ten days later and soon afterward eggs are deposited for the next year's brood. From these eggs caterpillars hatch which feed on the leaves till fall, when they seek sheltered retreats for the winter.

The leaf-rollers are very destructive to fruit trees during some seasons because of their work on blossoms, young fruits and foliage. The oblique-banded leaf-roller attacks the young apples as soon as they set and continues feeding upon them until the fruit attains nearly an inch in diameter. They eat large round holes, sometimes extending to or even beyond the core. The larva of the fruit-tree leaf-roller appears as the buds are bursting and

feeds upon the unfolding leaves. The leaves and blossom clusters are tied together in a web, within which the larvae feed. The injury to the fruit is similar to that described for the above associated species. The caterpillars mature in June and the moths appear about one month later. The fruit-tree leaf-roller deposits its eggs on the bark of the trunk and twigs, where they remain through the winter.

Treatment.—These insects rarely become destructive in orchards that are systematically sprayed with arsenicals before blossoming and again after petals drop. If an orchard is badly infested it will usually pay to make a special treatment for two or three seasons as the buds begin to expand. The fruit-tree leaf-roller is a more difficult pest to control. Recent experiments indicate that the insect may be efficiently combated by thorough spraying just before buds open with miscible oil diluted with fifteen parts of water, or with oil emulsion, preferably crude oil, containing twenty-five per cent. oil.

SPRAYING SCHEDULE FOR THE PRINCIPAL INSECTS AND DISEASES OF THE APPLE

First application.—As buds show green at the tips, use lime-sulphur wash at winter strength for San José scale and leaf blister-mite.

Second application.—Just before blossoms open, for apple scab and various leaf-eating insects, use lime-sulphur solution (32° Beaumè) diluted with forty parts of water, with two to three pounds arsenate of lead to forty gallons. May be omitted if insects are few and weather is dry.

Third application.—When blossoms are about two-thirds off, give same treatment as (2). This is the most important spraying for apple scab and codling moth. Should never be omitted.

Fourth application.—About two weeks later repeat (2) if weather is favorable for apple scab; that is, moist and warm.

Fifth application.—About first week in August repeat (2) to prevent late infections of apple scab and to control second brood of codling moth.

WEEDS

J. L. STONE

Professor of Farm Practice, State College of Agriculture, Ithaca.

One definition of a weed is "a plant out of place." Professor Roberts, as a result of some experiments in the thickness of seedling corn, once said, "The worst weed in corn is corn." A more common conception and one that is more satisfactory in this connection is that a weed "is a plant injurious to agriculture and horticulture."

Weeds growing in crops cause great reduction in yield and consequent loss to farmers. It has been estimated that the loss in crop yield from injury by weeds in the United States is not far from \$100,000,000 annually. Also, the presence of weed growths very materially increases the labor of giving crops the cultivation necessary for their thrift. This increased labor cost reaches a large figure.

Weeds affect crops injuriously in a number of ways. They rob the crop of plant foods that otherwise would be available for its more perfect development. They often draw heavily upon the soil moisture, robbing the crop of its much needed supply. This is especially harmful in time of drought. The crowding of weeds is especially harmful in some cases. The crop plants growing among the weeds cannot develop leaves normally. In the leaves the plant food is elaborated and from them the water in which it was taken up is evaporated. If the leaves are dwarfed and stunted for want of light and air, due to the crowding of weeds, they cannot elaborate sufficient plant food for normal development of the crop. In many instances the weeds actually crowd out part or all of the crop plants.

Some weed seeds are difficult or impossible to separate from the cereal grains and the grains are depreciated in commercial value on account of their presence.

A given amount of effort will do more towards the suppression of weeds if directed against the production of their seeds in the

vicinity, or the introduction of them from elsewhere, than the same effort can do fighting them after they are established in the fields. It is a case where "a stitch in time saves nine."

The chief source of supply of weed seeds in any locality is the badly tilled fields, the neglected areas, and the unkept roadsides. Fields that are tilled as thoroughly as they should be for the sake of the crops growing on them, usually do not produce much weed seed. This statement will not hold in the case of cereal crops growing on land infested with mustard, chess, etc. Thorough cultivation of the land, cleaning up of hedgerows, and mowing of the fence corners and roadsides, are among the first steps to be taken in the suppression of weeds.

The sowing of impure seed is an important source of weed perpetuation. Oats are likely to have in them mustard, Canada thistle, and ragweed; wheat or rye may carry chess or cockle; grass and clover seed may carry a large variety of pernicious weed seeds like daisy, wild carrot and plantain.

There is no excuse for sowing impure seeds. Pure seeds can be had. Impure seeds should either be cleaned or rejected. In the case of grass and clover seeds the experiment stations will examine and report on the purity of samples or, better still, the farmers may supply themselves with a hand lens and a seed bulletin and soon be able to test seeds for themselves.

Probably the most dangerous means of weed distribution at the present time is the mill and brewery by-products that are sold for stock food. The grain screenings containing large numbers of weed seeds are added to those by-products in many cases. Users of such feeds should examine them critically and reject them if they contain live weed seeds. There should be effective laws to prevent the selling of seeds or feeds infested with pernicious weed seeds.

Stable manure is always a fruitful means of weed dissemination unless great care is taken to keep weed seeds out of it, or the manure is thoroughly composted before being applied to the land. City manure is even more likely to introduce troublesome weeds than the homemade, but city manure is rarely purchased except for farms where the tillage is quite thorough, thus holding the weeds in check.

Itinerant threshing machines when brought on the farm with-

out being thoroughly cleaned out, often bring certain weed seeds from an infested farm to one heretofore free from those particular pests. It is well to insist that the machines be thoroughly cleaned before being brought on the farm.

The overflow of streams brings many seeds onto flat lands. Birds and animals are ever busy carrying some kinds of seeds from place to place. Some seeds are provided with appendages that enable them to be carried long distances by the wind. These factors, however, are largely beyond man's control. Hay and straw used for packing often carry weed seeds long distances to localities not infested with them. It is well to burn such material to avoid this danger.

While all of these methods of weed seed dissemination should have careful attention, it is the weed seeds allowed to mature on our farms that make us the most trouble.

Weeds are classified as annuals, biennials, or perennials. An annual produces seed and then dies the same season that it starts its growth. A biennial produces seed the second season and then dies. A perennial does not die as soon as it has produced seed but persists through several or many seasons, producing successive crops of seed. Some perennials multiply by underground stems, root sprouts or bulbs as well as by seeds. Some have fleshy roots that are very tenacious to life and are not injured by ordinary cultivation.

It is necessary to know the life habits and individual characteristics of weeds, to successfully combat them. While weeds have been carefully studied as plants from the botanist's point of view, it is to be regretted that we have no satisfactory body of information regarding the most effective methods of combating individual species.

The following are perhaps the most common annual weeds found in New York State: Sorrel, chickweed, purslane, summer grass (many species), ragweed, pigweed, smartweed, Buffalo clover, wild buckwheat, wild mustard, dodder.

The most successful methods of combating annual weeds are as follows:

First, avoid as far as possible the introduction of their seed into the soil, giving attention to all the points mentioned in the preceding pages.

Second, when seeds are already introduced they can be most cheaply and effectively destroyed by cultivating the soil just after they have germinated. This of course applies especially in case of tilled crops, and where a fallow may be resorted to to "clean the land."

Third, so far as possible, keep the land occupied throughout the entire season by a crop that can be given clean tillage or by a crop making such dense growth that the weeds are smothered. The so-called "laying by" of fields of corn or potatoes at midsummer gives many weeds an opportunity to produce an abundant crop of seed late in the season. The summer grasses, ragweed, pigweed and smartweed find their greatest opportunity in this practice.

Wild mustard is most troublesome in spring-sown grain crops. Thorough tillage with some hand work will prevent its getting the start in cultivated crops. The seeds are oily and will remain alive in the soil for years waiting for a favorable opportunity to germinate. Mustard plants grow well in such crops as oats, barley, or peas, and produce seed in great abundance before the harvesting of the crop. Fortunately a method of destroying mustard by spraying has been discovered. Twelve pounds of copper sulphate or 100 pounds of iron sulphate dissolved in 50 gallons of water and sprayed on an acre when the mustard is from three to six inches high will destroy it without permanent injury to cereal crops, peas, or grass and clover seeding.

Dodder is classed as an annual though it often hibernates on the stem of clover and alfalfa and becomes perennial in effect. Its habits of growth are so peculiar that it requires special treatment. Only clovers, alfalfa and flax among agricultural plants are harmfully affected by the dodders, of which there are several species. The dodder seed is usually sown with the alfalfa or clover seed. The young plants twine around the host plants and soon leave the soil, becoming parasitic. Dodder rarely seeds in New York but it does hibernate on alfalfa and clover stubble. It feeds on the host plants and destroys them in ever-widening circles.

Do not buy clover or alfalfa seed that is not known to be free from dodder. If small patches of dodder are discovered in the

fields destroy them by mowing close, piling on other litter and burning the spots over, or by grubbing up the land. If it is well distributed there is nothing to do but to plow up the land and seed over again. If all old plants on the soil are destroyed it is not likely that dodder will reappear unless seed is again introduced.

Among biennials there are numerous noxious weeds. Wild carrot, wild lettuce, yellow daisy and burdock are common. Biennials die after producing seed. If we cannot succeed

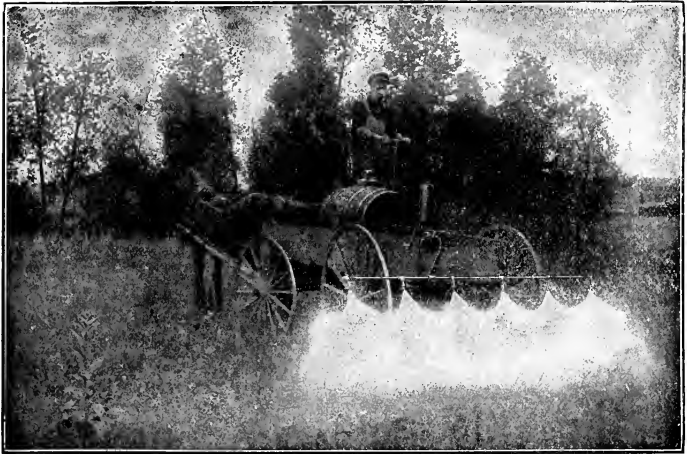


FIG. 142. GOOD HOMEMADE DEVICE FOR SPRAYING MUSTARD AND OTHER WEEDS, OR POTATOES

in destroying them during their earlier stages of growth, but can manage to prevent the seed produced from reaching the soil, we shall accomplish much. Unfortunately some biennials if prevented from producing seed at the usual period do not die but persist season after season in the attempt to produce seed. The burdock which normally dies at the end of the second season, if not allowed to produce a seed stalk, as in case of growing in a lawn, will live for a dozen years. In case biennials have become established the seed stalk should be permitted to develop in order to exhaust the root, and then destroyed before the seed becomes scattered. This is usually a difficult task to accom-

plish. Cutting, raking and burning wild carrot just before seeds are formed does much to reduce it, but unfortunately there are always enough lower branches that escape to produce sufficient seed to keep up the succession.

Herbaceous perennials. Troublesome as are the annual and biennial weeds, the herbaceous perennials constitute a larger class and are still more difficult to control because the root persists year after year and in many cases is so hardy as to resist destruction by the ordinary methods of tillage.

Conspicuous among perennials in New York are ox-eye daisy, buttercup, plantain, buckhorn or narrow-leaved plantain, dande-



FIG. 143. FIELD OF OATS ON FARM OF FRANK PINNEY, STAFFORD, N. Y.
DARK STRIP SPRAYED WITH SULPHATE OF IRON; WHITE STRIP
UNSPRAYED

lion, paint brush or hawk weed, quack grass, wild morning-glory, yellow rocket or Indian cress, dock, golden-rod, milkweed, butter and eggs or toad-flax, mallow, Canada thistle, common thistle, brakes or ferns, horse-radish, live-for-ever.

Besides their habit of producing seed abundantly, paint brush, quack grass and wild morning-glory multiply also by underground stems; while yellow rocket, dock, Canada thistle, horse-radish, and live-for-ever have hardy, fleshy roots that are not much disturbed by plowing. In fact plowing simply serves to multiply some of them, as each broken piece if not destroyed becomes a new plant.

Good farming (which means thorough preparation of the soil and thorough intertillage in case of crops grown in rows, or a dense, vigorous growth of broadcasted crops) will usually keep

fairly suppressed the daisy, buttercup, plantain, dandelion, chicory, golden-rod, and many others. Probably no plant can survive throughout a full season if absolutely prevented from making leaf growth for that period, but in connection with crop growing it is often impossible to give such thorough cultivation. Much careful, detailed study must be given to the various weed plants to determine just how each can be combated most successfully. A plant that has just exhausted itself producing a crop of seed is much more easily killed than at other times of the season. For instance, quack grass, which is one of our most persistent weeds, will be almost completely destroyed if the following method is used: Allow it to produce a crop of hay, then immediately plow the land, summer-fallow for a time, plant to late cabbage, which should be given absolutely clean culture till the end of the season. A seeding of two bushels of buckwheat to an acre will do nearly the same.

The same treatment will subdue almost any weed that grows. Canada thistle, horse-radish, and live-for-ever owing to their fleshy roots, a piece of which will act as a set for a new plant, are only multiplied by ordinary tillage. The principles involved in successfully combating them are:

- 1 Begin the fight when the plants are exhausted by seed production.

- 2 Keep them so smothered either by a dense growth or by constant cultivation that they have no chance to make leaf growth before winter to restore their weakened vitality.

- 3 Late in the season turn up the roots to be acted on by frost.

- 4 Put on another smother crop early in the spring. Continue this process till they succumb.

A bacterial disease is known sometimes to get into fields of live-for-ever and spread from plant to plant till the pest is removed. It is difficult, however, to keep track of places where infected plants may be secured. A study of this disease is now being made.

Woody perennials are sometimes classed as weed plants. Bushes, briars, etc., are best repressed if cut during August — the period of most rapid growth.

Poison ivy may be destroyed if sprayed while in full leaf by a solution of two pounds of arsenate of soda in five gallons of water.

CONCRETE ON THE FARM

DR. ELLIS M. SANTEE

Director of Agriculture, Good Will High School, Hinckley, Me.

Concrete is an artificial stone. It has a particular interest for the farmer because of its cheapness, simplicity and durability. Usually all of the materials required, except cement, are found on or near the farm and he can readily shape them to his will, the result becoming harder and harder as time goes on for about four years.

Concrete on the farm received a black eye in its early days on account of mistakes in construction. It is so porous and absorbs water so readily that it makes a cold, unsatisfactory building or floor in or on which to keep an animal, unless it is properly insulated. Both of these problems have been satisfactorily solved and there is now no reason why every building on the farm should not be built of concrete.

MATERIALS

The materials usually used are cement, sand, crushed stone, gravel or hard cinders. The sand should be sharp, not too fine, and as nearly free from loam as possible. It is always best to test sand from a new source by filling a glass fruit jar about two-thirds full, then filling with water, thoroughly shaking and letting it stand over night. The thickness of the layer of loam on top should then be measured. If its depth is more than one-twentieth of that of the sand underneath, it should be discarded, since sand containing more than 5 per cent. of loam is not safe to use in concrete construction. If gravel is used, a sample of it should be examined by sifting out all of the sand. If the proportion is about three of sand to five of gravel it is safe to use in most farm construction as it comes from the pit and should have about one of cement to eight of gravel and sand for coarse work. If crushed stone and sand are used, the proportions should be from two to four of sand to four to six of crushed stone and one

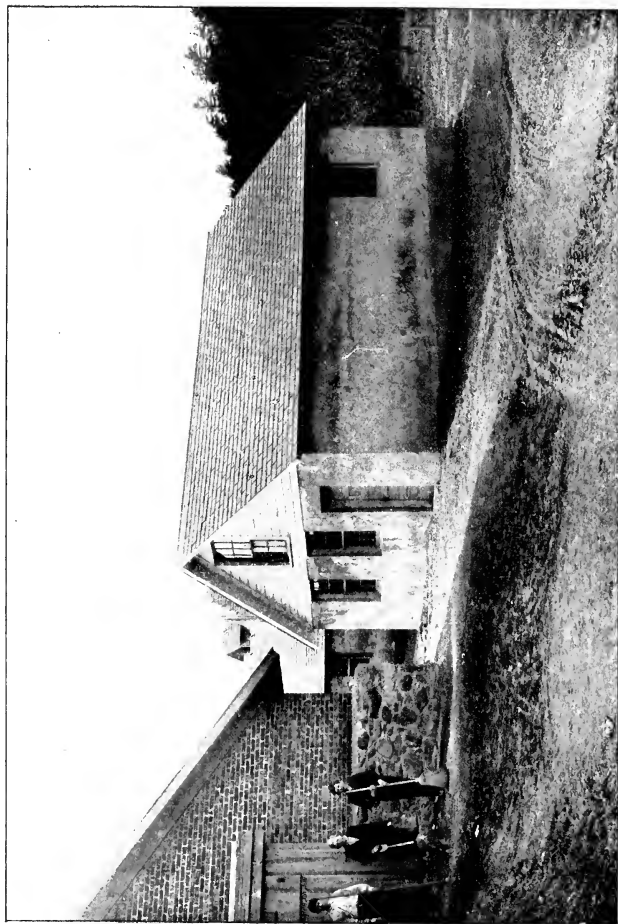


FIG. 144. CONCRETE MILK HOUSE AT BERKSHIRE INDUSTRIAL FARM, CANAAN, N. Y.

of cement, depending upon the size of the stone and the coarseness of sand. In other words, the coarser the material used, the less cement is required to fill all of the voids.

Hard cinders where they are convenient for the work, make an excellent and economical concrete. The fine material in them need not be sifted out; in fact, most cinders furnish enough fine material to take the place of sand entirely in most farm construction. I have built two buildings with cinders and cement alone with perfectly satisfactory results. To demonstrate the proportions of any kind of material required, provide a water-tight receptacle and measure accurately, fill level full with the coarser material to be used, then carefully measure in water enough to fill the vessel. The proportion of water to the size of the vessel will indicate the amount of sand required to fill all of the voids in the coarser material, then by mixing this coarser material with the indicated proportion of sand, again filling the vessel with the mixture, and then with water, the proportion of water used will indicate the amount of cement required with this mixture of these materials to make an artificial stone.

MIXING

A convenient way of measuring materials for the mixing board, is to provide a box 24 inches long, 12 inches wide, and $11\frac{1}{2}$ inches deep, with no bottom, and handles on either end. This box will hold just two sacks of cement, which is about the amount used for the ordinary batch in farm work. After filling it on the mixing-board it is emptied by lifting the box off the materials; beginning with the coarser material and finishing with the cement. Thorough mixing is essential to success and it must first be done while the materials are dry. The only safe guide to determine the completeness of the mixture is its color. If it is streaked it is not mixed thoroughly no matter how many times it has been turned. Use a shovel and shovel from the bottom of the pile, sifting the materials off the edge of the shovel upon the apex of a new pile. If this method is followed, three turnings will usually be found sufficient. Successful concrete work requires that the materials be placed in the form as quickly as possible after they are mixed.

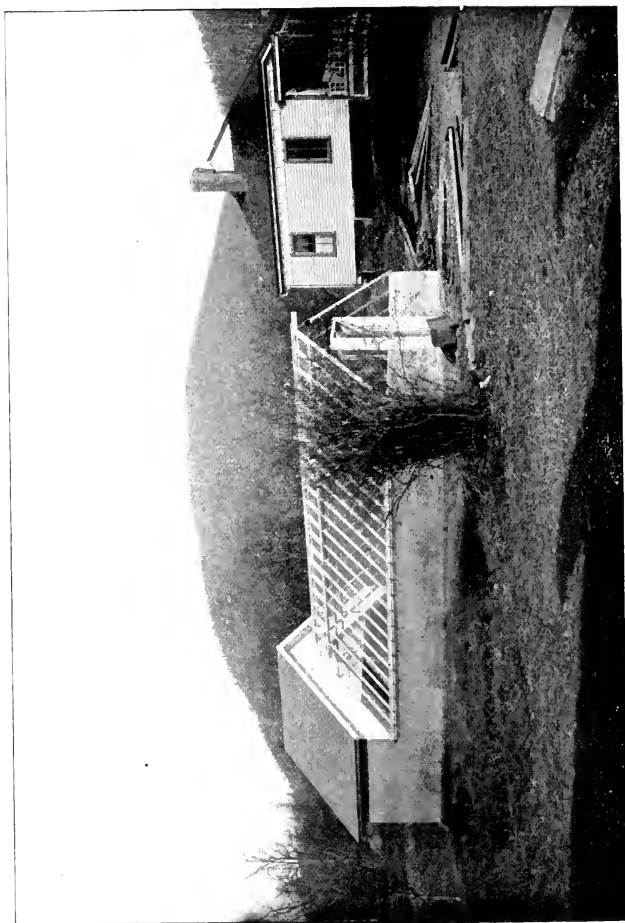


FIG. 145. CONCRETE HOTHOUSE AT BERKSHIRE INDUSTRIAL FARM, CANAAN, N. Y.

FORMS

In placing forms for concrete great care should be taken to have them strong enough to remain where wanted. In putting up a solid wall with forms, it is well not to build too great a depth without sufficient time for the lower course to harden as the great weight makes many forms give way at the bottom. If the wall be a high one, or the ribs used not very substantial, it is well to wire across one or two places between the board or plank forms, then it is simply a matter of clipping the wires at the surface before putting on the finishing coat.

RE-INFORCEMENT

Concrete, while having great resisting powers, has little tensile strength, consequently, any construction requiring the latter must be re-inforced with iron or steel. A roof, fence post, watering trough, corners and partition walls, may thus be greatly strengthened at slight expense. Material required for ordinary farm work may easily be obtained from the junk men, or many times from the farm machinery grave yard. Roofs may be most economically re-inforced by the use of ordinary woven wire fencing; if the span is more than ten feet, a reinforced rafter, having one inch in width and one in depth to each foot in width of roof, should be used.

INSULATION

One of the chief sources of dissatisfaction with concrete on the farm has been lack of insulation. This problem has been solved in building sidewalls by the use of a machine now on the market, which not only makes an insulated building having an air-space from bottom to top, but it also obviates the use of all forms; thus greatly cheapening the cost of installation, making a building that is warm in winter, cool in summer, and always dry.

The best method of insulating a floor was given us several years ago by Dean Cook, which is to bury tar-felt roofing in the floor. A simple method is to spread about one inch in depth of concrete, smoothing it down with a float or hoe, laying on the tar-felt roofing, then placing the balance of the concrete on top of the roofing. The first method was to paint this thoroughly with coal-tar, but this has been found to be unnecessary.

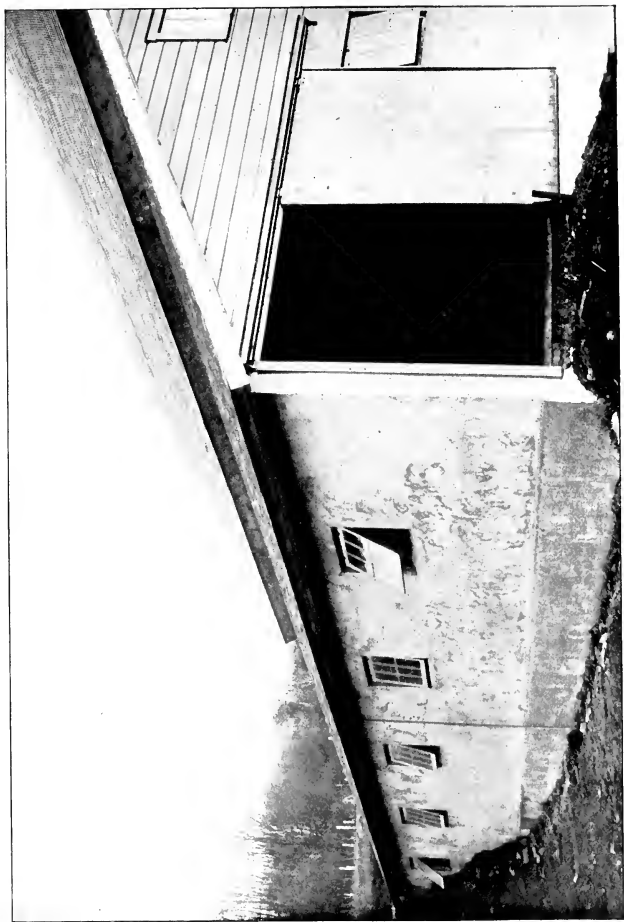


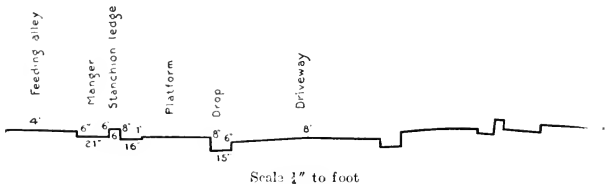
FIG. 146. CONCRETE HORSE STABLE AT BERKSHIRE INDUSTRIAL FARM, CANAAN, N. Y.

SILOS

A great many farmers now having wooden silos nearing the end of their usefulness, are using them as forms for concrete; and a very satisfactory method is to tack one-half inch furring strips vertically about twelve to sixteen inches apart on the inside of the silo, then lining with metallic lath, thoroughly stapled to the furring strips, and plastering with a mixture of about nine of cement to one of hydrated lime and thirty of medium coarse sharp sand, finishing with a whitewash brush and neat cement as described in the finishing paragraph. In building a new silo, by the use of the hollow-wall machine, a 15 x 32 silo recently constructed cost \$173.85 to the roof; the owner figuring his team work, hauling gravel and sand at four dollars per day. This silo had two walls, each four inches in thickness, a 2½ inch air-space, and a continuous door. It is practically indestructible and cost less than some of the more perishable ones.

DAIRY STABLE FLOORS

Much experimenting has been done on the various forms of stable floor, but the one indicated by the accompanying diagram is



probably more often adopted by New York State dairymen than any other, and gives the best results of any that I have seen.

OTHER FARM CONSTRUCTION

A very little ingenuity will enable any farmer to make his watering troughs, smoke-house, dairy, spring-curbs, fence-posts, floors and walks of concrete, and if properly put down, never wear out and are always satisfactory.

FINISHING

There are many methods of finishing concrete surfaces. A fairly smooth and satisfactory finish is easily applied by the use of a

whitewash brush. The wall should be thoroughly dampened and a very thin coat of clear cement and water mixed to about the consistency of the ordinary pancake batter, applied with a plastering trowel, and allowed to become partially hardened. It is then gone over carefully with a whitewash brush dipped in cement and water, about the consistency of ordinary cream. This gives a waterproof, as well as very pleasing, finish. There are various forms of stucco finish; the one more ordinarily used being the floated one and applied as follows: Thoroughly dampen the wall, take nine parts of cement, one part of hydrated lime, and forty to fifty parts of sand, depending upon its coarseness. All pebbles should be carefully sifted out. This is mixed to about the consistency of the ordinary plastering material and spread on as evenly as possible with a trowel. After it becomes about two-thirds set—which will be in from twenty minutes to an hour, depending upon the weather—it is gone over with a float, with a circular motion, all unevenness removed and the sand brought to the surface, leaving an even, rough finish, the roughness depending upon the kind of float used; the hard wood float making the smoother finish. If a very rough finish is desired, it may be accomplished by tacking a piece of felt or carpet over the face of the float. If the stippled finish is desired, proceed as above, only very soon after the plaster is applied, have some one follow with a broom, sponge, or brush. A very satisfactory implement is the wire brush used by the foundry-men for removing sand from castings. Care should be used that the stippling be evenly done, and it will be found that seldom will two people stipple alike. In the pebble-dash proceed as above until the plaster is applied, and follow immediately by dashing with the hand, a shovel or a whisk broom, a mixture of sand, or small pebbles and cement. If sand, about one to two and one-half, and if pebbles about one to six, upon the freshly plastered surface. This finish is easily applied and makes a very satisfactory one. Where various colored pebbles from the brook or other source are used, and the colors are desired to be shown in the building, a dilute solution of hydrochloric acid about one to eight, applied to the pebbles the following day will remove the cement and bring out the natural colors. There are various other forms of finish, all of which are more or less complicated, and the above will probably furnish sufficient variety for all farm purposes.

THE THREE LEADING BREEDS OF BEEF CATTLE

W. D. ZINN

Farmers' Institute Lecturer

Ask a dairyman to name the leading dairy breeds and he will intuitively answer, "Jerseys, Holsteins, Guernseys and Ayrshires." You may also ask any experienced producer of beef cattle to name the principal beef breeds and he will very positively assert that there are but three breeds of very great importance; namely, Shorthorns, Herefords and Angus.

It is the object of the writer to deal principally with the merits and demerits of these three breeds. In so doing, he is not unmindful of the fact that there are still other breeds that have some good qualities,—the Galloways, Red Polls, Brown Swiss, Polled Durhams and Devons.

SHORTHORNS

Shorthorns are so-called from the character of their horns. They are sometimes called Durhams because they originated in Durham County, England. Many centuries ago, there existed in the counties of Durham and Yorkshire and especially in the valley of River Tees, a type of large cattle which were the ancestors of the Shorthorn breed. There were two strains of these cattle called Teeswater and Holderness, but they have long since been blended.

Among the Shorthorns of today there occasionally is found what is called a Teeswater animal, that is an animal with very peculiar hindquarters and rounding in the rear. Their meat is said to contain less fat and to be somewhat coarser. These are found only among the Shorthorns, and it is due to the fact that more than two hundred years ago they were bred up from this breed. It only shows the prepotency of that breed. The following includes some of the early breeders of Shorthorns: Colling Brothers of Ketton, who began their work in 1780. At the dispersion sale of these brothers in 1810, many good animals were scattered over the country which greatly improved the cattle of that section. Thomas Bates commenced breeding Shorthorns at Kirklevington



FIG. 147. SHORTHORN COW, OWNED BY COTTRELL VALLEY FARM,
HOOSIC FALLS, N. Y.

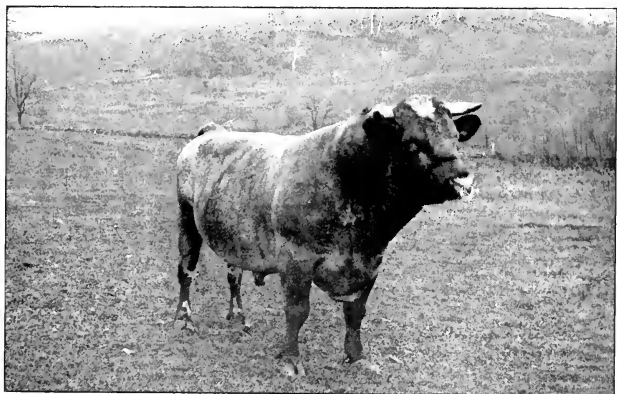


FIG. 148. SHORTHORN BULL, OWNED BY COTTRELL VALLEY FARM,
HOOSIC FALLS, N. Y.

about the close of the eighteenth century, and there is a strain of Shorthorns that bears his name to this day. Richard Booth founded his famous herd at Studley about 1790, and the Booth strain of Shorthorns is still found. These two strains were crossed by Amos Cruikshanks of Sittyton, Aberdeenshire, Scotland. His work resulted in the best strain of Shorthorn yet produced. Both the Bates and the Booth strains had serious objections, the Bates being too "horsey" as the breeders sometimes put it; in other words they are too long-legged. The Booth Shorthorns are not so objectionable in this respect, but they are plain in the head and have heavy horns. The Cruikshanks strain, or Scotch Shorthorns as they are usually called, are more compact, shorter-legged, and better in all respects. They have won more prizes in recent years than both the other strains combined.

Between 1783 and 1795, the first importation of Shorthorns was made into America by Messrs. Goff and Miller of Virginia. The first direct importation of Shorthorns into New York State was made by Samuel M. Hopkins of Moscow, 1815. The most notable sale of Shorthorns ever held was that of Messrs. Campbell and Wolcott of New York Mills, New York, 1873. The one hundred and eight animals of all ages sold, aggregated \$382,000. One Duchess cow brought \$40,600 which at that time was the largest price ever paid for a cattle-beast.

One of the advantages of the Shorthorns over the two other breeds under discussion, is that they are better milkers. If there is any such thing as a dual-purpose animal among cows, she is a Shorthorn. They will cross better than either of the other breeds,—where there is a drop of Shorthorn blood it always crops out. If Shorthorn bulls are bred on scrub cows, the offspring will make fairly good cattle. Shorthorn cattle will grow larger than either of the other breeds.

Some of the disadvantages of the breed are: Having been inbred so long they are not quite so hardy as the others,—this is especially true in the winter seasons; they take longer to mature. It is harder to make baby beef from Shorthorn cattle than from either of the other two breeds. If matured at an early age, they must have a good quantity of grain, which in a grazing country is an undesirable characteristic. The fat and lean are not as well intermixed as in other breeds.

HEREFORDS

Prior to the last half of the eighteenth century but little is known of the Hereford cattle. They are therefore not as old a breed as the Shorthorns; that is, they have not been bred so long along distinctive lines. The original cattle were a solid red, and they were crossed with the white cattle of Wales, thus enlarging their frames and giving them white markings. In the eighteenth century they became noted for their good grazing and beef-making properties. The most noted of the early improvers of this breed was Benjamin Tompkins and his son. Like Batewell, he



FIG. 149. HEREFORD BULL. OWNED BY COTTRELL VALLEY FARM, HOOSIC FALLS, N. Y.

improved his cattle through the most careful selection, in mating, and through in-and-in breeding. The first importation of Herefords was made into the United States by Henry Clay in 1817. William H. Sotham, of New York, who has done more to advance the Hereford interests than any other man, perhaps, made three importations into the State of New York. Nearly every state in the Union has its quota of Herefords, but they are most numerous in the Southwest.

Some of the advantages of the breed are: They readily adapt themselves to almost any country, and they have proved themselves eminently fitted for range conditions. In early maturing qualities, they are superior to the Shorthorns. For baby-beef pro-

duction they have but one equal, and that is the Angus. They make good use of their food and lay on flesh on the parts of the frame from which the best meats are cut; but when pushed with grain, they are inclined to become "patchy," that is, to form lumps in their flesh. They winter better when calves than Shorthorns do. Their uniformity of color gives them many admirers, and they cross most excellently with Shorthorn cows. They are less subject to abortion and to milk-fever than many other breeds.

Their weak points are: They make poor cows, for it is said of some breeders who produce show animals that they always keep one Jersey cow for each Hereford, the Jersey to help raise the Hereford calf. Also, they are a little more inclined to be wild than the Shorthorns. Originally they were too heavy in the fore-quarter, but that has been largely corrected by proper selection. They do not cross with scrub stock nearly so well as Shorthorns; a half-breed crossed on a scrub invariably produces a scrub. This is due largely to the fact that they are a new breed; but this objection will be overcome in the course of time,—in fact it is less noticeable now than in former years.

ABERDEEN ANGUS

This breed of cattle has won more prizes at the International Fat-stock Show than any other breed. This fact has brought the breed rapidly into prominence. It is probable that the Angus cattle originally came from the northeastern counties of Scotland with Aberdeen as the center. The Aberdeen cattle of today is the result no doubt of the amalgamation of two strains of spotted cattle found in the districts of Scotland. This breed was established about 1800, but was not introduced into the United States until 1873. More cattle of this breed are found in Iowa, Illinois, Missouri, Ohio and Indiana, than elsewhere. The characteristics of the Angus cattle are very similar to those of the Hereford. They mature very early and when well-fed are fat at any age. Being hornless, they are wanted by many feeders who do not like to dehorn cattle. Their uniformity of color makes them sought for by thousands of feeders who know that a lot of cattle that have the same color throughout will always sell for a little more money than the same quality of mixed colors.

Some of the objections that the champions of the other two breeds urge against the Aberdeens are: They are very poor milkers; are naturally inclined to be wild; they do not cross as well as the Shorthorns, and they do not get heavy enough.

Though the State of New York is not now a beef-producing state and is not likely to ever become such, yet, she may justly be proud of her record in introducing into the United States two of the leading beef breeds of our country; but there is a question even yet whether or not farmers living remote from shipping points in New York State would not do as well to grow beef cattle that can be driven on foot to market rather than to haul the dairy products so far. At any rate, this subject is worthy of careful consideration.

DAIRY BREEDS OF CATTLE

JARED VAN WAGENEN, JR.

Farmers' Institute Conductor

There are between fifteen and twenty different breeds of cattle recognized in America, although some of these have very few representatives and are slightly known. There are four — the Holstein-Friesian, Ayrshire, Jersey and the Guernsey that are universally recognized as special purpose dairy breeds. Then in addition to these, four other minor breeds — the Dutch Belted, the French-Canadian, the Brown Swiss and the Kerry are commonly classed as dairy cattle. The American farmers as a whole have done little in the originating of American breeds. There are two or three types of horses and three or four breeds of swine which are distinctively American, but every breed of cattle entered in the Fair Association premium lists are of European origin save only the little French-Canadian cow from Quebec. Our one American breed, the Holderness, was allowed to pass almost before it was formed — nor is it to be regretted for there is no possible excuse for a further multiplication of breeds. The following is a very brief account of the history and characteristics of our special purpose breeds of dairy cattle.

THE HOLSTEIN-FRIESIAN

The Holstein-Friesian is the black and white cow of Holland and the lower Rhine. Doubtless animals of this breed were imported to the Hudson Valley by the early Dutch settlers nearly three centuries ago. The Holland Land Company brought some over in 1795 and from time to time since, there have been importations. These early importations were from different parts of the country and so confusion of names resulted. In 1872 the first volume of the Holstein Herd Book was published and in 1880 another organization brought out the Dutch-Friesian Herd Book — thus putting two rival associations in the field. Finally in 1885 these

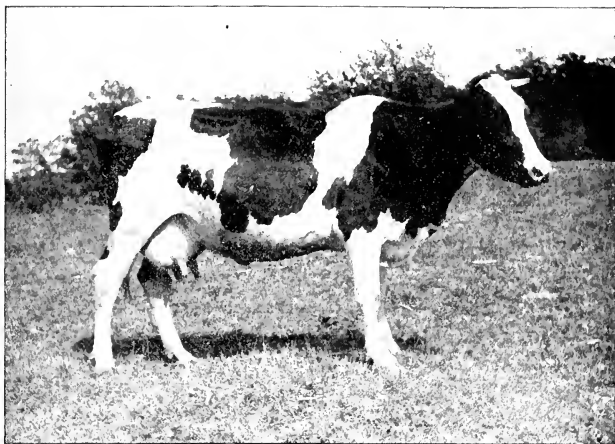


FIG. 150. HOLSTEIN COW, "ZADY BERGSINA 2D CLOTHILDE;" 99 POUNDS MILK IN ONE DAY: 639.8 POUNDS MILK, 27.59 POUNDS BUTTER IN SEVEN DAYS. OWNED BY H. H. STICKLES, CLAVERACK, N. Y.

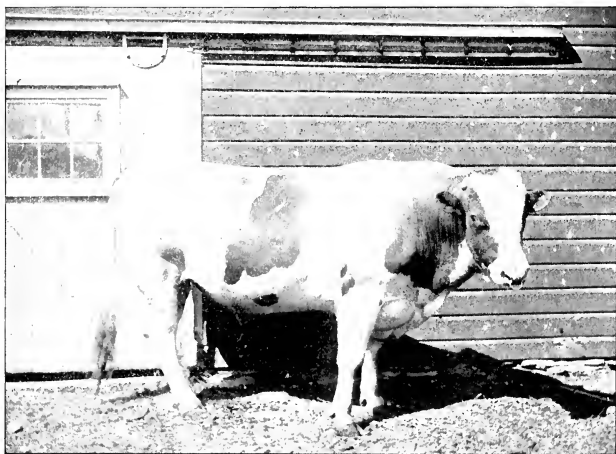


FIG. 151. HOLSTEIN BULL, "BUTTER BOY ARTIS CLOTHILDE 4TH." OWNED BY H. H. STICKLES, CLAVERACK, N. Y.

two organizations were merged into one and the name Holstein-Friesian adopted as a compromise — a rather cumbersome and meaningless name. The breed has become very widely distributed throughout the world, but especially in America.

The Holstein has some clearly marked characteristics that set her off from other breeds and for some purposes give her a place all her own. Her size is by far the largest of all the milk breeds, the mature cows if well developed frequently weighing from 1,200 to 1,300 pounds; while bulls of from 1,800 to 2,000 pounds are not uncommon. The color is always black and white but occasionally animals are very nearly pure white and conversely some are nearly black, but the black must not extend to the hoofs. The form in

the best specimens is an extreme example of the milk type with angular conformation, great development of the pelvic arch, enormous udder and milk veins and an abdomen that shows wonderful digestive capacity. The head should be lean and the jaw long between the muzzle and the angle of the eye — as distinguished



FIG. 152. HOLSTEIN COW, OWNED BY R. F. SEELEY, WATERLOO, N. Y.

from the triangular shaped head of the Jersey. The withers in cows of pronounced milking tendency are sometimes very thin and sharp, and this together with the prominent hip bones sometimes gives them an appearance of coarseness. As seen in the stables of good breeders, however, they carry enough flesh to take away this impression. The rump should be long and level, and an unusual width across the hookbones is a distinctive breed characteristic. The hide has rarely the mellowness and elasticity of the Channel Island breeds. The muzzle may be dark or light or mottled with patches of both colors. The horns are usually white tipped with black and ought not to be coarse or spreading. No cow has greater feeding capacity than the Holstein and no calf has greater vigor

or can make greater gains in body weight than the Holstein calf. Calves may weigh up to 125 pounds at birth and as veals, reach astonishing weights at four or six weeks. Mature animals while growing and fattening readily, give too large a proportion of offal to be desirable for butcher stock.

As a producer of market milk of medium grade, the Holstein cow has no rival. Unfortunately the percentage of fat is too low to suit discriminating markets, but her wonderful milk flow, her vigor and feeding capacity, together with the too general practice at shipping stations of receiving at one price all milk that will pass the state standard for fat, has made her by far the most popular cow in the great milk shipping districts. Then too, more than most other breeds, she has always been the working farmer's cow. The Guernsey, especially, and to a less extent the Jersey, has been largely in the hands of wealthy men, but the Holstein is today mainly handled by men who are keeping her strictly as a commercial proposition and she is getting an amount of skillful handling and feeding and advertising such as no other breed receives.

The Holstein-Friesian Association has a highly developed Advanced Registry record; most records, however, being made for periods of seven days or thirty days rather than a full year — a method not well calculated to determine the true dairy capabilities of a cow. Some wonderful milk and fat records have been made. The world record for seven, thirty and sixty days was recently made by Spring Farm Pontiac Lass who in seven days gave 585 pounds of milk containing 34.31 pounds of fat equivalent to 44.15 pounds of butter. Holstein records are usually spoken of as so many pounds of butter, this butter being calculated as 80 per cent. fat — an incorrect method that makes the results a little too high. There is one daily record of 127 pounds of milk; while yearly records of from 12,000 to 18,000 are not uncommon. It should be remembered that these milk records are made by large animals highly fed and skillfully cared for and that the percentage of fat is relatively low. The Holstein will always be most at home in regions of abundant food supply and deep pastures. She is admittedly at a disadvantage with the smaller breeds on scanty grazing or very hilly lands.

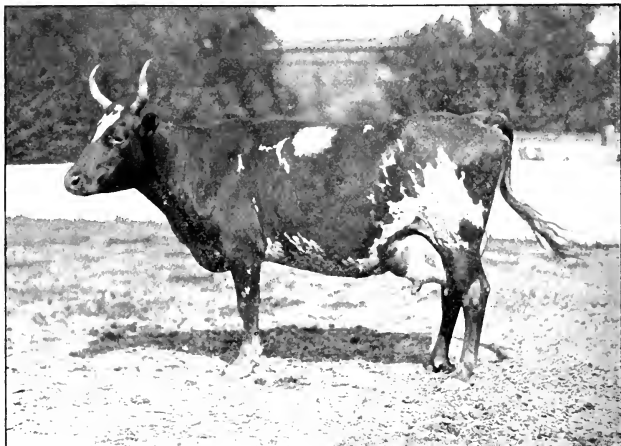


FIG. 153. AYRSHIRE COW, OWNED BY E. L. BUTTON, MELROSE, N. Y.

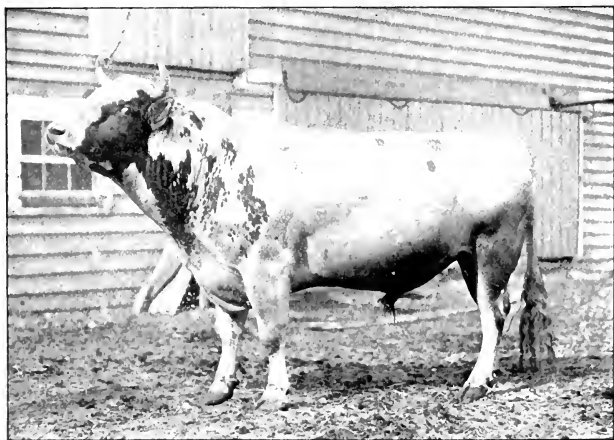


FIG. 154. AYRSHIRE BULL, OWNED BY E. L. BUTTON, MELROSE, N. Y.

THE AYRSHIRE

The original home of the Ayrshire is in the County of Ayr in Southwestern Scotland, which, by the way, was the land of Robert Burns. Ayr, with the neighboring counties, is described as a good agricultural country with much fine grazing land and with a very moist climate but not severe as compared to the northern United States.

The Ayrshire has been a well recognized breed for more than a century but there seems to be no general agreement as to the history of its formation. The foundation was surely the native cattle of that part of Scotland, and nearly one hundred and fifty years ago some specimens of the old Teeswater or early Shorthorns were brought in and mated with the native stock. There is also a tradition that some cattle from the Channel Islands — probably Jerseys — were incorporated in the breed. In fact so far as early accounts go, it would seem that there had been infusions of several English breeds as well as the cattle of Holland. But at any rate, before 1780, the County of Ayr had a distinctive breed of cattle which at that time were usually black and white and were locally famous for abundant milk yield. Later the colors became red or white and brown and white.

The first importations to America were probably made into Canada about 1800 by loyal Scotch emigrants — for the Scotchman has always loved the Ayrshire cow just as he has the Clydesdale horse. The first American Registry Association was established in Massachusetts in 1863, thus antedating the American records of other breeds. Their distribution has become almost world-wide and the Ayrshire has never lacked for ardent admirers, yet the breed has never attained a popularity or number comparable with either the Holstein or the two Channel Island breeds. They are most numerous in Canada, New England and the cheese districts of northern New York.

The Ayrshire possesses some rather marked characteristics. In size, the approved demand is for an animal approximating the weight of the Guernsey — say 1,500 pounds for the mature bull and 1,050 for the aged cow.

In conformation, the Ayrshire is normally less typical of the dairy ideal than the other three breeds. The barrel is round, the

ribs well sprung, the legs short and the wedge shape is pronounced but the hind quarters are frequently too beefy to please the man accustomed to the extreme dairy type. They are said by butchers to make very satisfactory carcasses of beef, not carrying the yellow fat of the Channel Island breeds nor the coarseness and offal of the Holstein. It is not too much to say that the udders on the average are the most perfect of any breed, being very broad and symmetrical with exceptionally well placed teats and carried well up against the body both forward and behind, but the fault of two small teats is not infrequent. The Ayrshire head is most unmistakable for its proud carriage and the erect black-tipped horns which tend to turn backward. The colors are white, mottled or flecked with red or brown; the proportion of each color is irregular, animals nearly pure white or red or brown being admissible.

The Ayrshire is not typically a butter cow; her milk is higher in fat than the Holstein, but fully 1 per cent. below that of the Channel Island cattle. She has been regarded as peculiarly satisfactory in the cheese districts.

The breed has an Advanced Registry Record, and milk yields exceeding 12,000 pounds are not uncommon.

The breed has a reputation for hardiness and an ability to give profitable returns on rough upland pastures. It is said that in Scotland she is called the "Poor Man's Cow."

The Ayrshire temperament is nervous and the bulls are often said to incline to viciousness more than other breeds.

THE JERSEY

The Jersey takes her name from the island on which she was originated. The Island of Jersey lies only fourteen miles off the coast of France and has less than 29,000 acres of land, yet is said to maintain about 40,000 cattle to say nothing of growing vast amounts of trucking crops for the English markets. It is remarkable that this little group of islands have given the world two of its most widely known breeds of cattle.

Some Jersey or Alderney cows were brought to Pennsylvania as early as 1818. Beginning about 1850 they were imported in considerable numbers and the American Jersey Cattle Club—the present record organization—was founded and began its work in 1868.

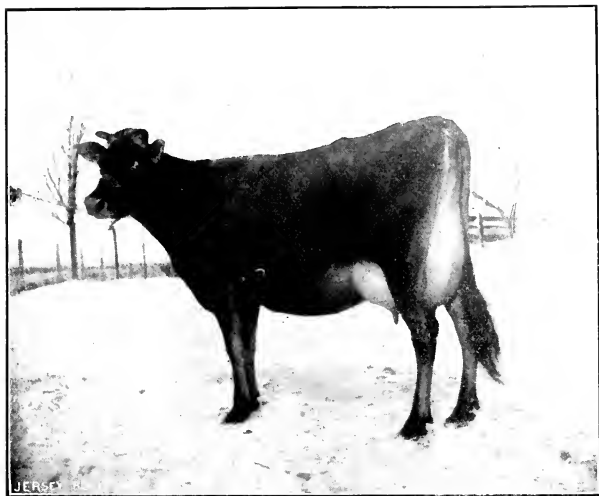


FIG. 155. JERSEY COW, "IMPORTED HERO'S QUEEN," 162973, A. J. C. C. FORTY POUNDS MILK PER DAY; 17 POUNDS, 4 OUNCES BUTTER IN SEVEN DAYS. OWNED BY GEORGE W. SISSON, JR., POTSDAM, N. Y.

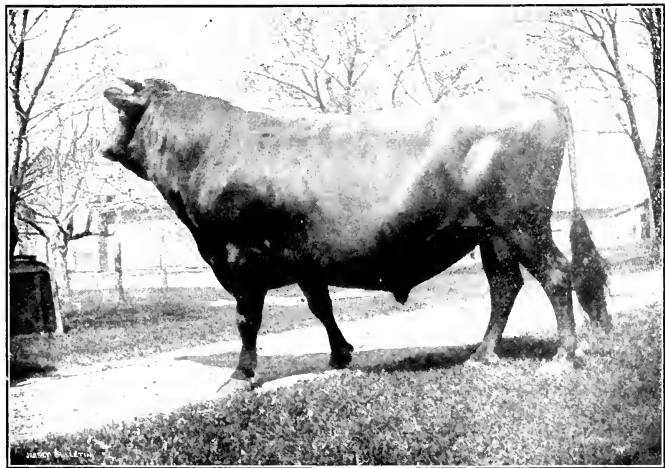


FIG. 156. JERSEY BULL, "LUCY OF ST. LAMBERT'S HEIR," 62661, A. J. C. C. OWNED BY GEORGE W. SISSON, JR., POTSDAM, N. Y.

Probably it is not too much to say that considering her numbers and her almost world-wide distribution, the Jersey is the most famous and popular of all breeds of cattle. From the standpoint of the artist she is the most beautiful, and more than a hundred years ago an English traveler in Jersey urged their importation in order that they might "ornament the parks of the nobility and gentry."

She has characteristics as well that make her a strictly utility cow and that have given her a place in almost every cowkeeping country of the globe. Bred originally in a mild climate she has demonstrated her fitness to the tropics or the severe Canadian winters. There is no reason for the common idea that she lacks constitution.

Her size, especially in her island home, is the smallest of the four dairy breeds. Under American conditions she tends to become larger and to lose a little of her fawn-like beauty.

Few mature cows weigh below 700, and weights above 1,000 are uncommon. Experienced breeders prefer bulls ranging up to 1,300 and the movement is toward greater size. The color may vary through a wide range, generally known as fawn. Jerseys are never wholly white but white markings may occur. A shade is found that may be called light cream, and also a very dark brown sometimes called mulberry black. Squirrel grey, orange fawn and lemon fawn are other descriptive terms. The preferable color is solid, without definite markings, but lightest along the spine, becoming darker on the belly and legs. The tongue and switch are often black but not necessarily. Always there is a lighter colored ring of hair around the muzzle — a very persistent characteristic even in slight admixtures of Jersey blood.

The head is lean and markedly triangular in shape as compared with the Holstein. The eyes are especially prominent. The horns ought not to be coarse and in some families are very light. The chest is frequently too narrow and the ribs often lack spring. As a rule, the Jersey hide is mellow and elastic but her secretions are less markedly yellow than in the Guernsey. The milk veins are frequently splendidly developed but poor fore udders are very common.

They reach maturity probably earlier than any other breed and yet some of the oldest cows known have been Jerseys. The milk is at least as rich as that of any other breed. The Jersey has not been a satisfactory butchers' animal — largely on account of her small size, and undue proportion of offal. The Jersey Register of Merit accepts lists for seven, fourteen, thirty days and one year. Mature cows must make at least twelve pounds of butter fat in seven days or 360 pounds of fat in one year. The highest price ever paid at public sale for Jerseys was \$12,500 for a bull and \$7,500 for a cow, both at T. S. Cooper's sales. These prices have been greatly exceeded at public Shorthorn sales. Up to June 1, 1913, there had been registered in the American Jersey Cattle Club, 113,300 bulls and 290,725 cows.

THE GUERNSEY

The motherland of the Guernsey cow is the little islands Guernsey and Alderney in the English channel between France and Britain. Most importations have been made from Guernsey which contains about 13,000 acres of land and maintains about 5,000 cattle — a very narrow home to be the nursery of a world-wide breed. The soil is fertile and the climate very mild and uniform. They have been bred in essential purity for many years and for a long time — centuries it is said — have been protected against infusion of other blood by a law prohibiting the importation of foreign cattle except for slaughter.

It is believed that Richard Harrison of Germantown near Philadelphia imported a pair of cattle from Alderney as early as 1818 and other occasional importations were made, especially after 1865. The date of the establishment of the American Pedigree Registry Record is 1879, and up to June 25, 1913, there had been registered in America 45,339 cows and 25,422 bulls, but popular interest in the breed was of slow growth until after the very favorable record made in the breed test at the Pan-American Exposition in 1901.

In characteristics the Guernsey is most naturally compared with the Jersey although the differences between the two breeds are marked. The Guernseys are coarser and heavier in build, weights of 1,500 pounds for mature bulls and 1,050 for aged

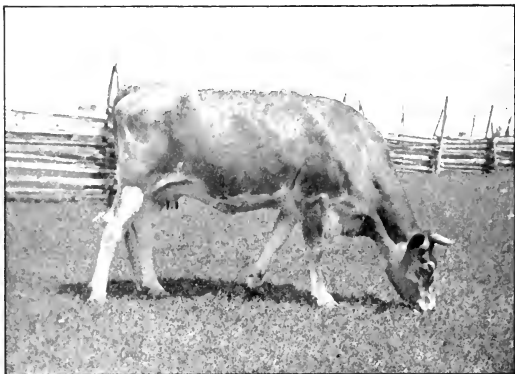


FIG. 157. IMPORTED GUERNSEY COW, OWNED BY A. R. EASTMAN, WATERVILLE, N. Y.



FIG. 158. GUERNSEY BULL, OWNED BY JARED VAN WAGENEN, JR., LAWYERSVILLE, N. Y.

cows being score card standards. In heifers before freshening there is often a suggestion of beefiness especially in the thick withers. A tendency toward a sway back and sloping rump is too common. The color may vary through a wide range of yellow or reddish or brownish fawn either solid or more usually with white markings, sometimes very abundant especially on the under part of the body and legs. Occasionally animals are nearly white.

The color of the muzzle is a fancy point much emphasized by some breeders. It is preferably a yellow buff or flesh color but dark flecks or even black does not indicate impurity of blood or lack of dairy character. The most marked characteristic of the Guernseys is the rich yellow hue of her milk and of the secretions as seen around the eyes, inside the ears and in the very yellow color of the dandruff on the udder and scrotum and at the end of the tail.

The horns are typically yellow at the base and rather short and incurved, and the hoofs amber colored, although many individuals of undoubted pure breeding fail to show these characteristics well developed.

The hide is usually particularly mellow and elastic — on the average excelling all other breeds in this regard.

The temperament of bulls and cows alike is exceptionally mild and gentle — the heritage of centuries of family care and confinement by tethering to very narrow limits.

The strong point of the Guernsey is the production of milk and cream for discriminating markets where the natural high color will enable it to sell at prices in advances of milk lacking this character. Guernsey milk is to be classed as high in fat percentage, being about the same as the Jersey in this regard.

At the beginning of 1912 there were about 257 Guernsey cows with official records exceeding 10,000 pounds of milk and 213 making 500 or more pounds — say 585 pounds of butter fat in a year. There is one official milk record exceeding 18,000 pounds. The requirements for Advanced Registry among Guernseys is that a heifer must produce not less than 250 pounds of fat in a year if calving at two years old or 3,600 pounds of fat in twelve months if a mature cow.

The top price ever paid for a Guernsey at public sale is \$3,200 for a bull and \$2,600 for a cow — not particularly high as compared with record prices for either Holsteins or Jerseys. On the other hand, the average level of prices at present is probably above any other breed. Grade Guernseys are also wanted at prices substantially higher than other breeds.

THE MINOR DAIRY BREEDS

There remain four other breeds of cattle which, while not widely known, are generally classed as special dairy breeds and hence should be briefly mentioned here.



FIG. 159. KERRY COW

The Kerry is the little cow from western Ireland, developed there by poverty-stricken tenant farmers, and is a most interesting example of how long years of scanty feed and hard conditions have resulted in a dwarf race of cattle. Red Rose, a celebrated prize-winner of the breed, was only 34 inches high at the withers and weighed about 400 pounds. She was unusually small, however, as

cows commonly weigh from 500 to 600 pounds, while mature bulls range from 800 to 1,000. In spite of their diminutive size they are regarded as of true milk type, and Red Rose is claimed by her owners to have made the astonishing record of ten thousand pounds of milk in a year. The color is generally black — sometimes red, and there may be a little white on the scrotum or udder. The head is lean with white horns tipped with black and the conformation is low with fine bones. The Kerry is at least interesting as an example of an animal moulded by environment.

THE DUTCH BELTED

The Dutch Belted originated in Holland where they are said to have been known for more than 200 years. Specimens of the breed were imported to America as early as 1838, but they have never attained any wide distribution or popularity. It has been the misfortune of the breed to have a color marking so striking and unusual that all other characters have been lost sight of in the perpetuation of this feature.

The size of the Dutch Belted is smaller than the Holstein, being comparable to the Guernsey or Ayrshire. They are black with the one distinguishing and peculiar character of a white belt which may be only a foot wide or may be a broad blanket encircling the body. The belt should be as uniform as possible in width with a clean-cut line of demarkation between the two colors. The belt is a very firmly fixed character and is usually transmitted to the grades. There does not seem to be available many records of production that would justify any high estimate of the breed for dairy purposes.

THE FRENCH CANADIAN

The French Canadian has the unique distinction of being the only recognized breed of American origin, having been developed by the habitants of Quebec Province, Canada. It is believed that they are descended from cattle from France brought to Canada previous to the English occupancy. Like the Kerry they are the product of rather poor agricultural conditions. This has given them hardiness and the ability to make good use of pasture and rough feed. The conformation and sometimes the color is sug-

gestive of the Jersey to whom they are probably related through a common French ancestry. The color may be black or dark fawn or brindle with the ring of lighter color around the muzzle characteristic of Channel Island cattle. In size they are rather dwarfish, averaging smaller than the Jerseys, but they possess a certain

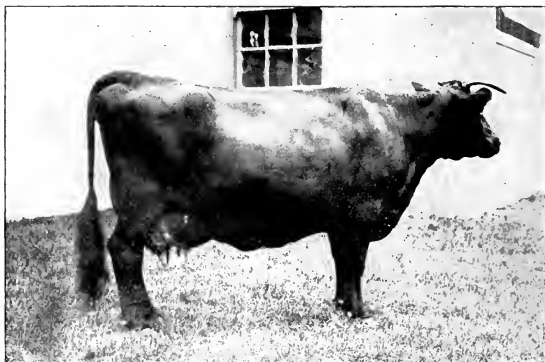


FIG. 160. FRENCH CANADIAN COW, OWNED BY WILLARD FRA-LICK, MARATHON, N. Y.

angularity of form denoting the milking type and such records as are available indicate that many individuals have dairy ability of a high order. They are widely distributed in lower Canada and there are a few herds scattered in the northern states.

THE BROWN SWISS

The Brown Swiss has formerly been classed as a general purpose breed, but recently the Brown Swiss Breeders Association has declared that they were to be deemed a special purpose dairy breed.

Their native home is in the mountain valleys of the Alps where they have been carefully bred for many generations.

As a breed they have some rather distinctive characteristics. The size is above medium; the color is a shade of brown which in some cases may be described as mouse color—it is commonly lighter along the back and under the belly. The muzzle has the

mealy ring suggestive of the Jersey. The udder is often white, while the hoofs are black and the horns white with black tips.

It must be said that the conformation of the Brown Swiss does not agree with the usual ideal of the dairy type. The body is notably blocky — not to say beefy. The neck is short and thick with heavy throat latch and dew lap. The legs are short, and the whole appearance is suggestive of vigor and strength.

As might be expected from their home environment, the breed is renowned for hardiness and vitality, and also bears an excellent reputation for docility.

So far as dairy performance is concerned, the number of records are not large, but there are some individuals of marked dairy ability.

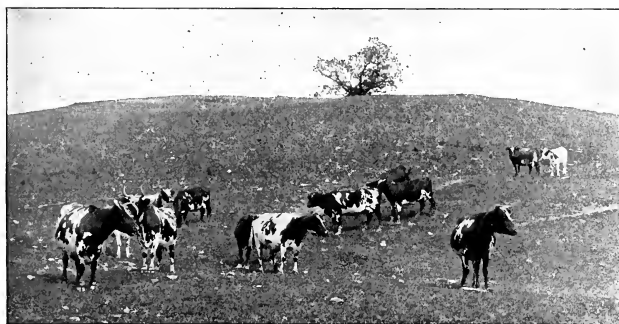


FIG. 161. AYRSHIRE CATTLE ON FARM OF E. L. BUTTON, MELROSE, N. Y.

HORSES

JAY GELDER

Superintendent, Adirondack Stock Farm, Glens Falls, N. Y.

THE PERCHERON

The Percheron, in point of numbers, date of introduction in the United States and popularity, stands first among the draft breeds in this country. When first introduced to the United States all of the draft breeds of France were included under the name of the Norman horse and later under the name of Percheron and for years, Beuloomais, Bretonnais, Ardemais and Nivernais were all imported under these names and sold as one breed.



FIG. 162. IMPORTED PERCHERON STALLION "KRIQUET,"
91433. THREE YEARS OLD; WEIGHT, 1,820 POUNDS.
OWNED BY ADIRONDACK FARMS, GLENS FALLS, N. Y.

Later on the Percheron stud book in France was organized and the registration of Percheron horses was confined to those bred in the La Perche district. The first Percherons were imported into New Jersey in 1839 and from this early importation they have become the best known and have done more to benefit and

enrich the farmers of the United States than all of the other draft breeds combined. In 1912 there were 3,292 of the various draft breeds imported and of this number probably three-fourths were Percherons.

The origin of the Percheron horse is conceded to be the large, coarse mares of Flanders crossed with the Arabian stallions, which produced the rugged, gray, active, small draft animals used so largely for the quick movement of heavy loads. The American trade called for darker colors with more size and bone. The French breeders were quick to respond to this demand and unlike their English or Scotch brothers were quite willing to cooperate with the backers of their breed in America in furnishing the type of horse required.



FIG. 163. FOUR BLACK IMPORTED PERCHERON MARES; AVERAGE WEIGHT 1,800 POUNDS. OWNED BY ADIRONDACK FARMS, GLENS FALLS, N. Y.

Unlike the Belgian breeder the Frenchmen are quite willing to sell any or all of their prize animals at a price, and it is remarkable that the Percheron horse has not sadly degenerated with the enormous drain of so large a number of their best animals each year. But the breed has been greatly benefited and helped by the French government in buying and furnishing for breeding purposes, a large number of good stallions at a nominal service fee, also by the approval and subsidy of the best stallions owned by individuals and the liberal amounts awarded in prizes at the big shows.

The principal faults of the Percheron are his light bone, his short pasterns and steep rump. By careful breeding the faults have been largely corrected. Compared with the Shire and Belgian, the Percheron have less bone, but more than the Suffolk and Clydesdale. Good individuals have clean flat cordy legs that give them great wearing quality.

The success of the Percheron in this country has been secured by their stylish, upstanding type and prompt cheerful action, together with the fact that the Percheron grades wear better, sell better and fill the bill better than those of any other breed. This breed has been fortunate now as well as in the past in having among its supporters many of the most noted horsemen in America and thousands of dollars are being collected and spent by the American Percheron Breeders' Association each year in prizes and advertising the good qualities of this breed.

THE BELGIAN

Without doubt, the large, black Flanders horse was a strong factor in the foundation of most of the other draft breeds, and to the difference in taste, requirements and environment can be attributed the variation in type and characteristics of most of the recognized draft breeds of today. Flanders being a part of Belgium and Holland, the Belgian breeders claim they have the oldest draft breed in the world.

Until recent years the many faults of the Belgian horse prevented them from becoming popular with the American breeders. The coarse, square, sour head, lop ears, short, thick neck, low back, short round hips, and crooked coarse hocks, were the rule rather than the exception.

To the most liberal policy of prizes and subsidy and careful inspection by the Belgian government is due the wonderful improvement of the Belgian horse during the past ten years. As high as \$1,200 subsidy is paid to champion and prize winning stallions, but these stallions must be kept in service for five years before the owners are allowed to draw this money. This together with the high service fee (\$100 by the season) commanded by the prize stallions make it impossible for outside buyers to secure a popular prize winning Belgian stallion at any price. Nearly all railroads

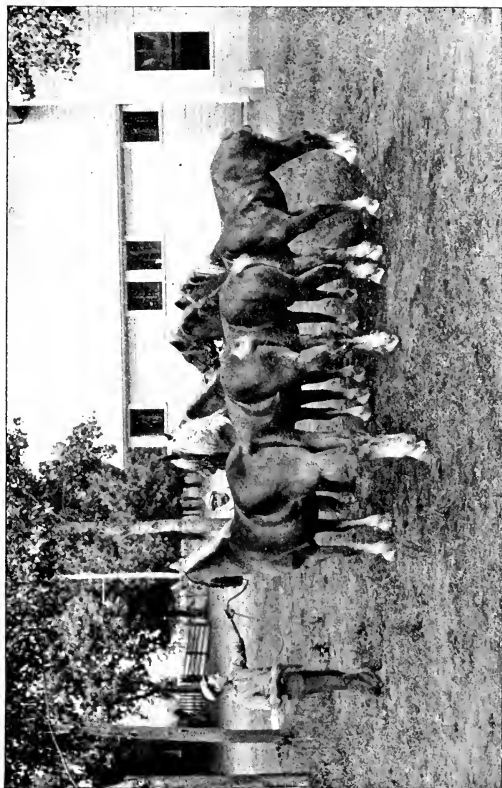


FIG. 164. TWO-YEAR-OLD BELGIAN FILLIES. IMPORTED AND OWNED BY ADIRONDACK FARMS,
GLENS FALLS, N. Y.

in Belgium are owned by the Government and mares may be shipped for breeding at one-half the regular rates.

The great improvement in this breed together with their heavy bone, short legs, great, wide deep bodies, bold, free action have made them the ideal horse for moving heavy loads or to cross on the common unclassified mares of this country. High-grade Belgians or a cross of Belgians on grade Percheron mares have produced some of the highest quality of draft market geldings in the world.



FIG. 165. IMPORTED BELGIAN STALLION "POLTRON," 6628. THREE YEARS OLD; WEIGHT 1,900 POUNDS. OWNED BY ADIRONDACK FARMS, GLENS FALLS, N. Y.

Although the prices of the good Belgian stallions and mares have advanced sharply abroad, they are being imported in greatly increased numbers. American buyers are handicapped in securing some of the exceptionally good animals by the German and Holland buyers, who are willing to pay almost any price for either stallions or mares of the highest quality.

The Belgian horse is a remarkably good feeder and shipper and acclimates rapidly, and is an example of what can be done intelligently by breeding and liberal feeding especially on green foods, in the stables as well as in the rich low pastures.

In colors the chestnut and roans are especially desirable, but color in this breed is not a strong factor, there being many good bays and browns with some blacks and grays. Until recently the scarcity and high prices of Belgian mares have prevented their importation to any great extent, but the strong growing demand in the United States for Belgian breeding stock, without the booming by wealthy breeders or registry companies, has made the call for mares so insistent that importers are bringing them over in increasing numbers, and at higher prices than are paid for any other draft animals abroad.

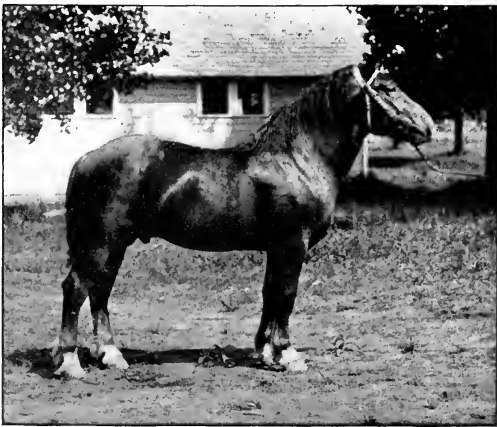


FIG. 166. IMPORTED SUFFOLK PUNCH STALLION "RENDLESHAM DAUPHIN," 3850. THREE YEARS OLD; WEIGHT 1,800 POUNDS. OWNED BY ADIRONDACK FARMS, GLENS FALLS, N. Y.

THE SUFFOLK

Originating in Suffolk County but bred also in a few of the other eastern counties of England; being the third English draft breed but so radically different from the Clydesdale or English Shire, it

is a wonder they can be produced in the same country. It is one of the oldest of all the draft breeds, bred and handled by a few enthusiastic breeders; not quite as large as the Percheron, a little lighter and cleaner in bone. No animals are allowed to be recorded in the Suffolk Stud Book but chestnuts, a fact referred to with much pride by the English breeders. However, all shades are popular from golden sorrel to dark chestnut, with very little white markings. This color is a very strong feature of this breed and is readily transmitted to the grades when crossed on our common mares.

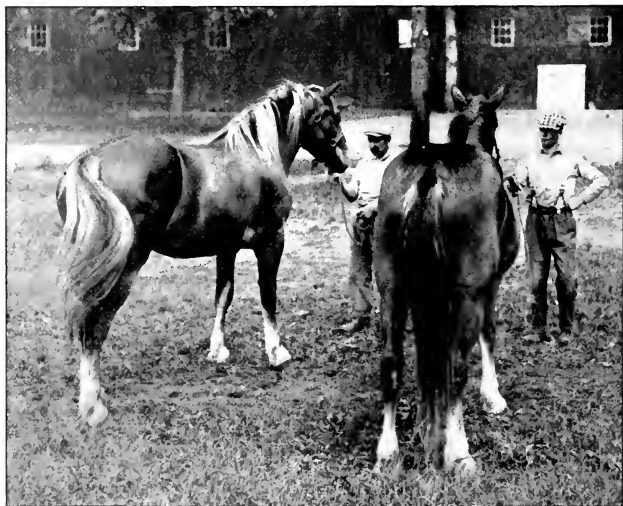


FIG. 167. TWO-YEAR-OLD IMPORTED SUFFOLK FILLIES. OWNED BY ADIRONDACK FARMS, GLENS FALLS, N. Y.

It is remarkable that a breed so small in number and bred in a district only a few miles in extent, could have been perfected and kept pure and distinct and withstood drain year after year from Russia, Austria, Australia and Canada, as well as the United States. In spite of some undesirable features this breed has made many friends and are admired by all lovers of draft horses in all

countries. The small numbers and consequent high prices together with the color, which has not been a popular one among draft horse breeders generally in this country, are the only restrictions to the rapidly growing popularity of this breed.

The undesirable features of the old time Suffolk was the long, low back, crooked hock, light bone, flat feet and lack of action. These features are being largely eliminated or remedied and today it is possible to get Suffolks as fine in quality and conformation as any found in draft breeds.

The good qualities of the Suffolk are their very uniform get, their great endurance and wonderful tractability and good disposition. They mature very early and are probably the easiest keepers of any of the heavy breeds, and are sure to become very popular with the small breeder and ordinary farmer, as they make an ideal farm horse rather than a heavy draft horse for the city markets.

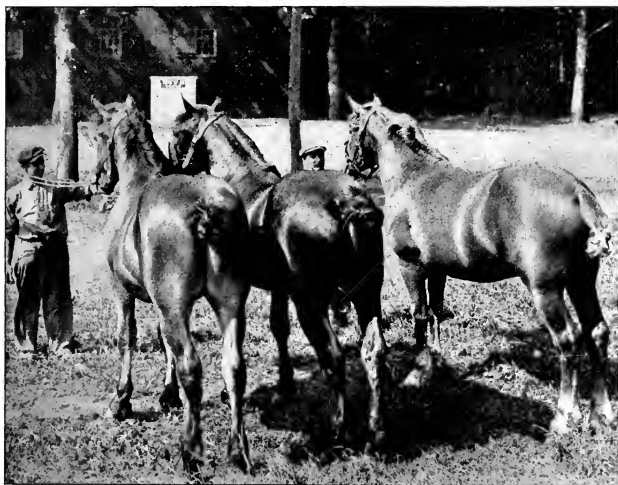


FIG. 168. BELGIAN, PERCHERON AND SUFFOLK YEARLING STUD COLTS. OWNED BY ADIRONDACK FARMS, GLENS FALLS, N. Y.

THE CLYDESDALE

A breed whose popularity in the United States today has been sadly diminished by the Scottish breeders' obstinate refusal to cooperate with or consider the wants or requirements of the American trade.

Twenty-five years ago the Scottish drafter was the most numerous of the heavy breeds in our show rings, but the fact that the American and Scotch trade require horses of a different stamp, together with the fact that Clydesdale breeders in the United States and Canada have beaten the Scotchman at his own game, has reduced the number of Clydesdales imported to this country to its present small proportions.

An insistent and increasing demand in America for a more rugged horse, heavier boned, with less feather and less white markings has given the French and Belgian breeders many millions of dollars, as a reward for their efforts and willingness to cooperate with the supporters of these breeds in this country. To the old Flemish or Belgian horse the best Clydesdales of today as well as most of the other draft breeds trace their origin. The history of this breed shows that to the black Flemish blood introduced in Scotland some 160 years ago, can be traced the improvement of the Clydesdale.

The faults of the Clydesdale are the lack of size, weight and ruggedness; and to this we may attribute the fact that the Clydesdale gelding hold their place in the city markets only when of the very highest quality.

A draft breed, light in top, lacing in neck, light boned, and generously splashed with white, have and will continue to eliminate the Clydesdale horse from the consideration of many practical American importers or breeders, except a few wealthy men who can afford and prefer to breed, show, and make a specialty of a class of horses that are not numerous or popular.

The good qualities of the Clydesdale are their level top, round barrel, clean flat bone, well set posterns, with action at a walk and trot that it would be hard to fault. The Clydesdale is still the preeminent drafter in Canada, but from recent inroads made by the importation and sale of other European draft breeds, it needs no prophet to forecast the decline of the Clydesdale popularity across the border.

THE FRENCH COACHER

For some three hundred years, the French Government has maintained a national stud and directed and encouraged the breeding of the light horse as a source of supply of remounts for the army.

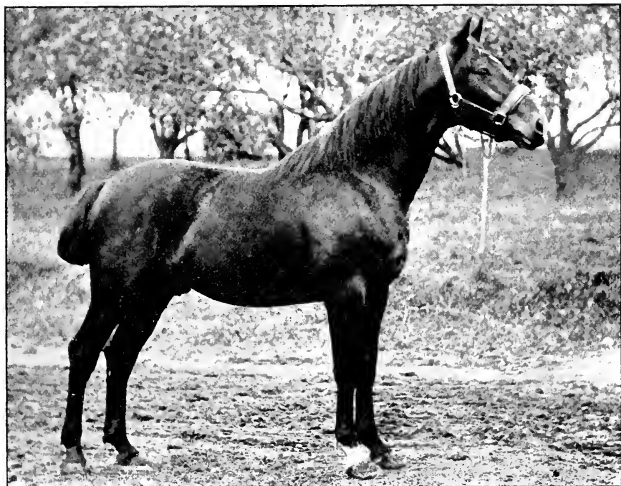


FIG. 169. FRENCH COACH STALLION

In originating this breed native French mares were mated with thoroughbred stallions, and the progeny were called "*demi sang*" meaning half breed. This name could not be used successfully in America with this breed and it was changed to French Coach.

From 1885 to 1895, the French Coacher was very popular with American breeders and at all of the principal fairs in the United States they were a great attraction and much admired.

In originating the "*demi sang*" or French Coach the French government early recognized that the ideal horse for the army also for saddle or driving purposes would be a horse of substance, quality and great endurance, and this breed has been developed and perfected as a long distance horse by the liberal prizes offered at the

many government races during the past century. The trotting branch of this breed are required to go from a mile and a fourth to over three miles, from a standing start under the saddle, over uneven sod tracks, and the time they make under these conditions, handled and ridden by the unskilled French trainers, shows that the thoroughbred blood which is being used freely at the present time has given them greater staying qualities than is found in any other breed.

The French Coacher, after a long and faithful trial in America, did not produce the results expected. This was not entirely the fault of the breed, as they were crossed with every kind of mares from mustang to English Shire, and the colts produced were as uneven as the dams, and in many cases of less value. But when the stallions were mated with trotting bred and other light bred mares, the colts in many instances were of high quality and stood well to the front in the show rings, and for gentleman drivers.

The auto and the demand for more rugged farm stock is responsible for the decline of the French Coach horse, as well as all driving horses. It is to be regretted that a breed having the size, quality, finish, style, high action, speed and endurance of these horses are not still bred even in limited numbers in this country.

There were none imported from France in 1912, even though prices were lower than in former years. This government does not allow the French Coacher to come in free of duty now, as the recent crossing with the thoroughbred prevents them to be classed as a pure breed.

SHEEP IN NEW YORK STATE

EDWARD VAN ALSTYNE

Director of Farmers' Institutes

Sheep are again attracting attention. For this there are several reasons. In many sections farm labor is scarce, particularly such as can be trusted to milk cows. The more expensive buildings needed to meet the modern requirements for milk production and the conditions necessary to produce dairy products meeting the demands of the handlers and consumers, all contribute to the cost of the products,—often beyond the price received for them. The large amount of high-priced feed to be purchased tends to make the margin of profit too small. These things are causing many to go out of dairying. Having farms adapted to stock and appreciating their advantage, such naturally turn to sheep. These require less labor and many times no other feed than that which can be produced on the farm. Men are learning that it is not gross amounts of sales which count, but the net remaining after expenses are paid.

Beef is scarce and high and must continue to be relatively so. This increases the demand and price of mutton. For a number of years wool has been, and doubtless will be, a by-product. With the right kind of sheep intelligently handled enough can be realized for the carcass to insure a profit, so that a few cents more or less per pound for wool, due to tariff changes or fashion in clothing, is no longer a vital matter.

DIFFICULTIES

The man who at the outset looks for the drawbacks in his business is the one most sure to succeed. There have been and still are many such in the sheep business. The first and most emphasized—but by no means so great as to cause it to stand at the head of the list—is the destruction of sheep by dogs. This is serious as the writer can testify, having been a sufferer on more than one occasion—once losing over sixty in a single raid. A large bell on every twelfth sheep in a large flock, and a greater proportion of



FIG. 170. FLOCK OF HOTHOUSE LAMBS

them in smaller ones is of benefit. Dogs will chase sheep so belled, but they are not so likely to. The chief value of the bells is that they give the alarm, and the sheep can be saved. Often the dog is caught in the act — a great source of satisfaction to the catcher. Such bells can be heard a mile when the wind is in the right direction.

Laws compelling the registration and tagging of dogs are of material benefit. Such are in existence in some counties. Any board of supervisors in New York State has power to enact such a law. This reduces the number of dogs, particularly those most likely to run at large, and also identifies them. Better than either of the above, is a woven wire fence four feet high with posts not farther than twelve feet apart, the wire close to the ground and a barbed wire on top. This will keep the sheep in and the dogs out, and is the most economical fence to build.

INJURIOUS PARASITES AND DISEASES

While the loss is not so apparent, unquestionably that from internal parasites and disease has been much greater than from dogs. Many have given up their flocks on this account. Most of such parasites can be easily controlled by feeding tobacco. This should be placed with the salt in proportion to one quart of tobacco to three of salt and kept before them continually both winter and summer. The stems are best run through a feed cutter, but the dust will answer the same purpose, or the cheaper grades of smoking tobacco. I have met several farmers who raise a small piece of tobacco for this purpose. Sheep do not care for it at first, but — like men — after they acquire the habit, they become very fond of it and pick it out from the salt.

Much has been said about “grub in the head.” Doubtless, well-matured sheep with plenty of grub in the stomach will suffer little from this trouble. There is no danger of the grubs going to the brain. They are in the sinuses of the nose and will crawl out in due time, later turning into a fly which will lay eggs for more grubs and cause the sheep much annoyance. If sheep can lie in cool, shady places they will have less trouble from this pest. A pole smeared with tar, against which they must rub the nose when eating salt, will prevent the entrance of the fly into the nostril.

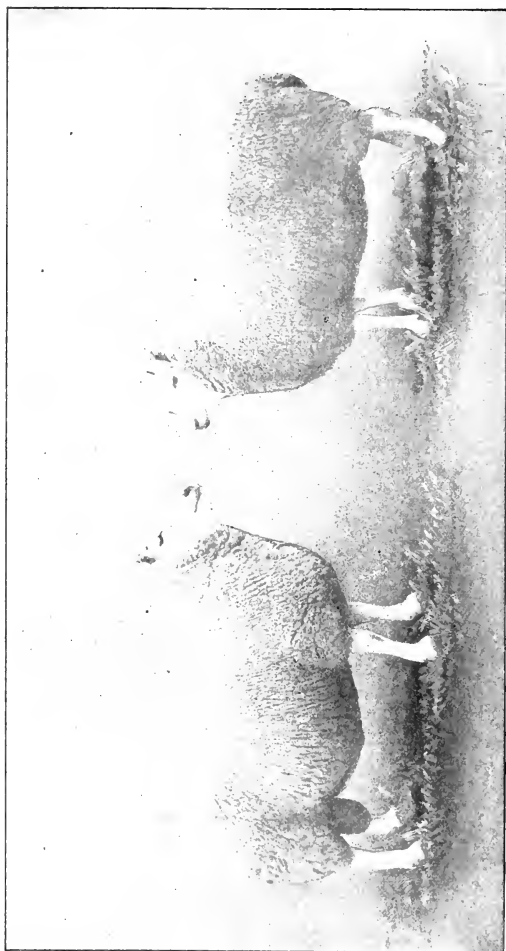


FIG. 171. CHAMPION CHEVIOT RAM AND EWE (TWINS) AT NEW YORK AND VERMONT STATE FAIRS, BRED AND OWNED BY J. A. CURRY, HARTWICK, N. Y.

The scab and external parasites, such as ticks, are no longer serious, because they can be easily controlled by the carbolic dips. With the first named, it is better to shear the sheep and immerse them in the dip, rubbing the affected parts with a corn-cob in order that it may penetrate beneath the skin and reach the minute insect which burrows there. If the weather is very cold, a blanket can be cheaply made of bran sacks. If the ticks are troublesome in mid-winter, place the sheep carefully on its back, open the wool along its neck and abdomen, then pour in the dip blood-warm, letting it work through the wool along the skin. If the dip is poured from the back down, it will follow the fiber of the wool and little of it reach the pests. After the sheep are shorn, the lambs should always be dipped. Attention to this will largely do away with ticks.

Foot rock is more troublesome with fine wools, but may be serious with sheep of the coarser wools. The feet should be examined before the sheep are turned to pasture and any surplus growth pared off. Wet yards and swampy pastures are favorable breeding grounds for this disease. When animals are affected, they will spread the disease to sound sheep. At first appearance, turpentine may effect a cure, but after the disease has become seated, there is nothing better than a saturated solution of sulphate of copper — blue vitriol — three pounds to one gallon of water. The feet should be cut so that the solution will reach the seat of the disease. Then compel the sheep to stand in a tub of the solution for not less than five minutes. Heroic, persistent treatment at the outset will be worth more than to simply bathe the affected parts.

The above are the most common troubles and may be handled with comparative ease. There are some more serious diseases such as "nodular disease" and "liverfluke," which require treatment from the most skilled veterinarians. Fortunately, they are not common in this country. When death occurs from disease, a post-mortem should always be made in order to treat intelligently others similarly affected. If one starts with a healthy flock and gives intelligent care and feed, his loss from disease and parasites will be slight. Carbolic dips and tobacco should always be on hand. As a matter of fact, the most serious losses come from insufficient or improper feed and exposure.

We cannot expect to be successful with the open wool, English breeds which for generations have been developed by an abundance of the most nutritious feed with least exposure, unless an abundance of proper food is supplied and they have shelter. Such sheep are not adapted to pick a living from barren hillsides, or to be sent forth as cleaners-up of new land. Neither will they stand wet weather. A sheep's skin is very thin, and if the fleece becomes saturated in the fall when there is little heat and sunshine, it must dry from the heat of the body, not only exhausting vitality but producing pneumonia and kindred troubles. It will pay to shelter such sheep from the fall rains as well as from the winter storms.



FIG. 172. PRIZE WINNING SHROPSHIRE RAM AT NEW YORK STATE FAIR, 1910. OWNED BY M. D. BECKLEY, HARTWICK, N. Y.

BREEDS

One of the questions most frequently asked is, "Which is the best breed?" There is no best breed. All have some peculiar points of excellence, which makes them of value for some particular purpose. Very briefly I will call attention to some of the characteristics of the leading breeds. All of them, except the Merino and Tunis, come from Great Britain.

The Downs

The "Downs" are most numerous. These embrace the Southdown, Shropshire, Hampshire, Oxford and Suffolk. In this country the first-named were for years the most numerous and popular. Than these, there are no more perfectly formed sheep in existence. They have great fecundity, and the lambs mature early with fine quarters. They will not shear as much as some of their cousins among the "Downs," neither are they quite as large.

Perhaps the most popular as well as numerous among this class to-day are the Shropshire. They originated farther north in England and are the result of intermingling of several bloods with the native sheep, notably, Leicester, Cotswold and Southdown. Careful selection for more than a half century has produced the beautiful sheep of today. Mature ewes average from 125 to 175 pounds, rams from 175 to 250 pounds. They are nearly as prolific as the Southdowns, better shearers and their lambs develop as rapidly. Often the ewes are allowed to become too fat to breed well.

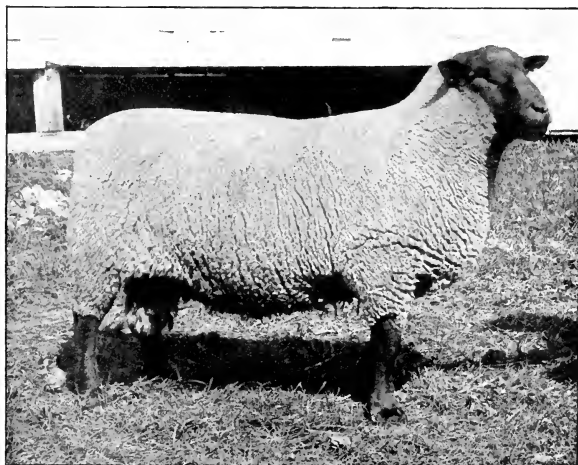


FIG. 173. CHAMPION SUFFOLK RAM, NEW YORK STATE FAIR, 1910.
OWNED BY MILTON B. SISSON, ALMOND, N. Y.

The Hampshires are the largest and heaviest of the Downs. They are never a sheep to rustle, but deserve a place in the hands of intelligent breeders who are not afraid to feed.

The Suffolk and Oxfords have many of the characteristics of the last named; neither are as plentiful.

For men with level farms, who are good caretakers and whose business is to produce lambs for the early summer or fall market, I should recommend the Shropshires, Southdowns or Hampshires.

The Long Wools

These embrace the Leicesters, a very old breed and much more numerous in Canada than in the United States. Robert Blake-well of Shorthorn cattle fame, began the improvement of these sheep as early as 1755. They are large sheep with a white face and long coarse wool.

A generation ago the Cotswolds were very numerous in this country. Since then they have been largely superseded by the Downs. They somewhat resemble the Leicesters; their wool is very coarse and for purposes where long staple is needed, very valuable. They are not heavy shearers and their lambs require a long time to mature.



FIG. 174. COTSWOLD SHEEP FROM FLOCK OF D. H. TOWNSEND'S SONS, LODI, N. Y.

The Lincolns of today resemble the Leicester, and well they may, for they possess a strong infusion of this blood. Doubtless they are the heaviest sheep in the world. "Joe Wing" in "Sheep Farming in America," speaks of having seen quarters

of this breed in England weighing ninety pounds. The wool is exceedingly long and they are heavy shearers. None of these long wools are as good mutton sheep as the Downs and they suffer even more from exposure on account of their very open fleece. I do not advise the eastern farmer to use any of the long wools, although they have a place on western ranches for a top cross where size is desirable and early maturity is not an important factor.

Cheviots

This breed occupies a place peculiar to itself. They are native of the Cheviot Hills in Southern Scotland, and are more hardy than any of the above-mentioned. They are beautiful in appearance with a fine fleece of good wool and make excellent mutton. They are well adapted for the hill farmer who wants more mutton and beauty than the Merinos afford with lambs maturing on pasture. They are not as easily confined as the last named or the Downs.

Merino or Fine Wools

One of the first importations of these sheep was by Robert R. Livingston of Clermont, Columbia County, N. Y., very early in the nineteenth century. In 1807 he imported a ram from France called "Rambouillet" which weighed 145 pounds and sheared nine pounds of wool. He paid 750 francs, or approximately \$145 for him. A son of this ram which was named "Clermont," after his native town, weighed ten pounds more than his sire and sheared nine pounds and six ounces of wool. These rams with imported ewes and others of his own breeding furnished the foundation of many of the Merino flocks in New York and the East. On March 3, 1809, the legislature of the State of New York voted to publish 1,000 copies of a book by Mr. Livingston on sheep. This work of 250 pages called by him "an essay" was published in London in 1811. The style is what might be expected from a Livingston of that period and the subject-matter might be read with profit by the shepherds of today. His system of breeding has not been improved upon during the century.

They were the sheep of our fathers, and in the days when wool was the chief factor and shelter not abundant, they were well

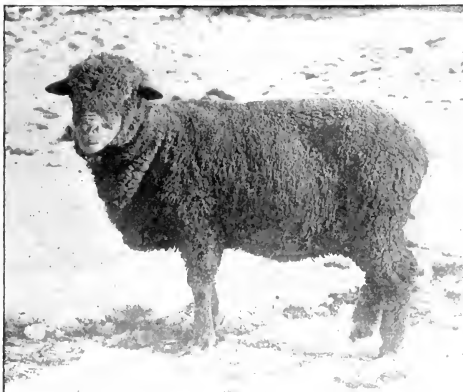


FIG. 175. RAMBOUILLET EWE



FIG. 176. DELAINE EWE

suited to their use. As broadcloth clothing went out of fashion and the coarser wools were more in demand, and mutton became the important thing, they were largely displaced by the strictly mutton breeds. Many who were eminently successful with the Merinos made failures with the latter expecting they would thrive under the same conditions. While I would advise no one to breed the small, wrinkled "Vermont" Merinos except for



FIG. 177. RAMBOUILLET RAMS FROM THE FLOCK OF D. H. TOWNSEND'S SONS, LODI, N. Y.

show purposes, the Delaine and Rambouillet are worthy of a place on many farms too rugged to profitably keep the Downs. They will suffer less from exposure because of the closeness of their wool; are good mutton, and their heavy fleece compensates for their less valuable carcass, although they are not to be despised in this respect. They will conceive very early and when mated with a mutton ram are very desirable for early lambs, being excellent mothers and large milkers.

The Dorset Horns

These are of mixed blood and take their name from their native home and the fact that both ewes and lambs have horns. They have been much improved in the last two decades and make

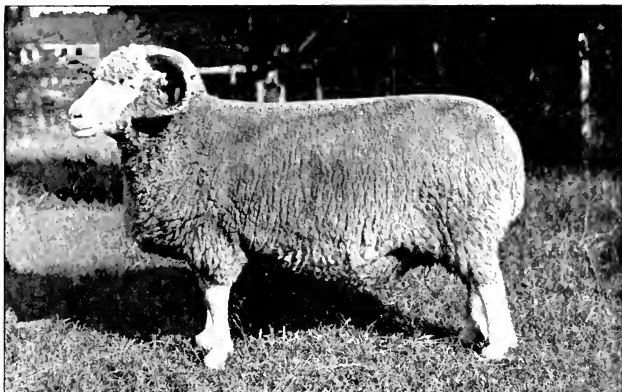


FIG. 178. DORSET EWE. OWNED AND RAISED BY HEART'S DELIGHT FARM, CHAZY, N. Y.

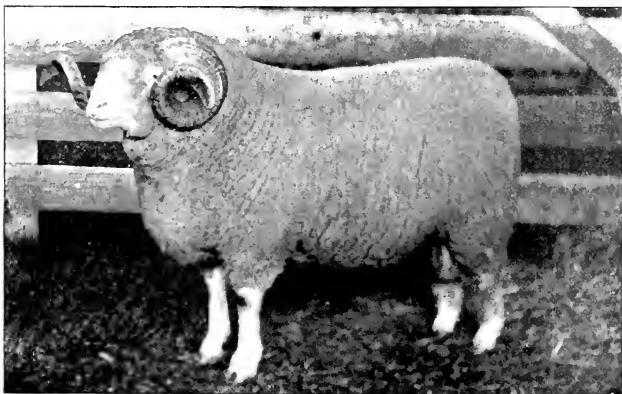


FIG. 179. DORSET RAM. OWNED AND RAISED BY HEART'S DELIGHT FARM, CHAZY, N. Y.

a very fine appearance. They have good quarters and an excellent fleece. Their chief value is for producing early lambs. They breed readily at any season and are very heavy milkers. It is said that long ago in England they were used instead of cows. The lambs mature very early but do not gain as rapidly after the first six months.

Tunis

These are the "broad-tailed sheep of Algiers." There have been several flocks of these in this country, in the South, for nearly two centuries. More recently they have spread North and over the eastern states, owing to their peculiar character as producers of early lambs. Being a native of a warm country they conceive readily in warm weather, maturing lambs as early as the Dorsets. They are fine milkers and the best of mothers. No lamb will go to market with the same amount of fat, particularly on the hind quarters, in better shape at three months of age. After this they mature more slowly. They are fair shearers and have been greatly improved in the forequarters in recent years. Any one who proposes to produce winter lambs should either use these, Dorsets or the large Merinos.

PURE BREDS VS. GRADES

I would not be understood from the above as meaning that everyone should keep pure-bred sheep. Men of limited means cannot afford to invest in any number, since the interest charges and depreciation are more with high-priced stock, and they should have better care. It is always desirable, however, that the stock should be uniform in type and approach as near as may be practicable to the breed best suited to the farm and that particular form of sheep industry the owner intends to follow. It is vital that the ram should be not only pure bred but a typical specimen of the breed. A grade may be a good individual but he is as likely to reproduce his grade ancestry as that of the pure breds from which he is graded. A pure bred will sire lambs of greater uniformity and by carefully selecting the strongest and most typical specimens of these one can breed up a flock that in appearance and real worth will be nearly or quite as profitable for production as pure breds. By the purchase of a few regis-



FIG. 180. YEARLING TUNIS RAM "XERXES" No. 1653.
OWNED BY J. N. MACPHERSON, SCOTTSVILLE, N. Y.



FIG. 181. GROUP OF TUNIS EWES. OWNED BY J. N. MACPHERSON, SCOTTSVILLE, N. Y.

tered ewes a flock of pure breds will finally be obtained at a small cash outlay. The increase from such may be sold as breeders for at least twice that which the grades will bring for mutton.

FEED AND CARE

If the pasture is scanty, Dwarf Essex Rape may be sown in the early spring at the rate of two pounds to the acre to which the sheep or lambs can have access during the summer; or, if sowed in August, will afford splendid feed until the ground is covered with snow. Sheep should never be turned on rape when they are empty or when it is wet, since it will likely produce bloat. It is poor economy to leave the sheep on the pastures — worse still the meadows — in late November or December after the grass is frozen. They will fill themselves with it but it contains very little nutriment. With full stomachs they will be drawing on their stored-up flesh and more feed will be required later to have them in proper condition. Early sowed rye makes an excellent pasture; if not fed too close it will benefit rather than injure the crop. During winter, sheep should have some form of succulence. For this there is nothing cheaper than the ordinary purple top turnip. These can often be grown in the corn, or after early potatoes, and the cost will be little more than the harvesting. Silage is a very close second. Two bushels to fifty sheep may be fed with great profit. Cabbage is even better. Early cut hay — either clover or mixed grasses — will do much to provide suitable food. Coarse timothy should never be fed. It lacks nutriment and the sharp stalks sometimes penetrate the walls of the stomach. Bright barn-housed straw is more desirable if one is short of coarse fodder. Sheep love a variety. An occasional feed of corn fodder is excellent. Where beans are grown, the pods and smaller stalks make fine forage for them.

How much and what sort of grain to feed must be determined by the condition of the sheep and what one intends to do with them. If they come into winter quarters in good flesh and are not to drop their lambs until pasture; with some form of succulence and clover or alfalfa hay, no grain will be necessary. If they are thin enough grain should be fed to put them in good flesh before lambing. This will materially increase the growth of wool. A sheep poor in flesh



FIG. 182. SHEEP SHEARING ON THE FARM OF JARED VAN WAGENEN, JR., LAWYERSVILLE, N. Y.

is always a light shearer. Success with lambs aside from vigorous mature parent stock, depends more on a sufficient food supply of the right character than any other one thing. A lamb is made up of bone, blood and muscle. This calls for mineral matter and protein in the food of the mother, in order that she may supply building material in addition to the requirements of her own body and have an abundance of milk for the lamb at birth. Corn will not furnish this, and an excess of it often produces goiter in the lambs. When lambs are born in the winter, grain should be given at least a month before they are expected. If the sheep are thin, two months is better; beginning with a half pint daily and gradually increasing to a whole one. This grain may be bran, oats, brewers' grains — wet or dry — or any protein by-products such as one would feed to dry cows or heifers. After the lamb is born, corn may make up from one-quarter to one-half of the ration.

Sheep should have access to fresh, pure water at all times. They need an abundance of litter under them with dry, well-ventilated — not necessarily warm — quarters. They should not be allowed to crowd through small entrances or against sharp projecting corners. The feeding racks and mangers should be cleaned of any left over feed or litter. Sheep will lose in flesh with an abundance of feed before them if fresh food is placed on that they have breathed over.

It is most desirable that the ram should have attention at time of service. It will always pay to stable him during the day with a supply of fresh water, early cut hay, with plenty of oats and a little oil meal added. This will keep up his vitality, and if he is only placed with the flock at night he will not exhaust himself, the lambs will be stronger and come more evenly with less barren or late breeding ewes. These details attended to will insure lambs strong and vigorous, able to stand and nurse in coldest weather with an abundant milk supply by the mother. Weaklings, or ewes not owning lambs, will be entirely done away with. Sheep should not be allowed to run where the hayseed or dust will get into the wool. It is impossible wholly to separate it, and will depreciate the value of the fleece several cents per pound. Nothing except soft wool twine should ever be used to tie the fleece. Binder twine

is particularly objectionable as the fiber gets into the wool and cannot be separated. It is always better to shear before the sheep go to pasture. They can be protected in the barn much better than in the open. The soft grass will loosen their bowels and much wool around the hind parts will be soiled and made worthless.

WINTER LAMBS

The name "hot-house" lamb is misleading. Such lambs are produced in ordinary barns with the care suggested above. I have had a half dozen born during a mid-winter day when the mercury stood at zero and everyone was up and nursing within a half hour without assistance. In this barn water freezes on cold nights.

For those who have limited pasture areas, this branch of sheep husbandry will be found very profitable. It is difficult to get sheep to breed in warm weather; hence, the supply will not be large. One is catering to a trade not likely to be affected by hard times. The winter lamb at from \$6 to \$15 per carcass, fifty pounds live weight, is a luxury afforded only by the well-to-do, and the demand for them is increasing. Formerly New York City was the only good market; now all the large cities find sale for them. The leading hotels in our capital city of Albany serve them regularly on their tables. The average man thinks raising them a difficult job and is afraid of a little extra feeding. For all these reasons the business is not likely to be overdone and hence is profitable. First, one must have sheep that will breed early. Those best suited for this purpose have been emphasized. Lambs fit to go to market after the holidays may sell from \$10 to \$15; after this the price drops to \$5 or \$6 in May. It costs no more to grow the early ones, if the sheep will breed. This means mating in July or August. Grain feeding the ewes prior to this time will be of advantage; then observation of the details mentioned under "feed and care" are necessary. There is nothing that will grow a lamb so fast as its mother's milk. Whatever one would feed to a cow to make her produce will serve the same purpose with a sheep. After the lambs are a couple of weeks old they will eat grain by themselves from a box to which they can have access away from the ewes. A little brown sugar at this time will be relished and at five

cents per pound one can afford to feed it to lambs bringing twenty-five cents per pound. A good ration is made up of a half bushel of corn meal or cracked corn, twelve quarts of oats or bran or a combination of both, and four quarts of linseed meal, giving only

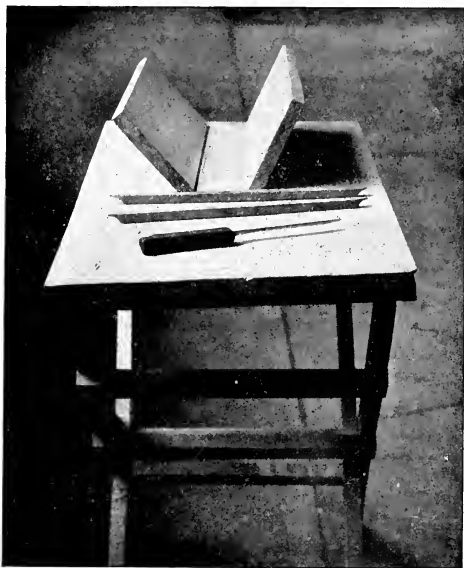


FIG. 183. SHEEP DRESSING TABLE, KNIFE AND BACKSETS

as much as they will eat up clean three times a day. It is not difficult to make them gain five pounds per week which will put them in market at from eight to twelve weeks old. A better proposition, even at six dollars, than to keep them six or eight months at the same price or less. When the lambs are taken away, the ewes are dried up and one has his lamb crop in market by pasture time. To bring the highest price such lambs must be fat. It is useless to ship any other kind. They can be hog dressed with the feet taken off at the knee and gamble joint. Many prefer the head left on.

The wool should be sheared from the abdomen, the entrails removed, and back sets placed behind to hold the skin back and the caul fat fastened with wooden toothpicks over the exposed part, particularly the hind quarters and ribs. They never should be shipped until they are thoroughly cooled through. Then they are wrapped in cheese cloth with coarse sacking outside. They can be shipped by express cheaply and a long distance.

MARKET LAMBS

Many dollars are paid out for mutton lambs from outside the community or state, which could profitably be produced at home, thus solving the problem of eliminating the middleman's profit. I was in a section last fall admirably adapted to sheep, which also had been filled all summer with city people able and willing to pay good prices for food, yet but a few dollars had gone into the hands of local farmers for lambs. The proprietor of a fashionable resort there told me he would prefer to buy from the locality, but most of his supply had to come from New York City, two hundred and fifty miles distance, shipped there from the west or Canada. What difference can a wool tariff make under conditions such as these?

Late lambs weighing about sixty pounds, too light to bring best prices in market, can be purchased in the fall from pastures. Such can often be had for at least two cents per pound less than they will sell for when fat, weighing from eighty to one hundred pounds. On good feed they will begin to grow rapidly in October when they will eat a little corn on the pasture. One pound there will accomplish as much as two combined with winter feed. They will also have learned to eat it, so that there will be no lost time when they will have come into the barn. They will then, when properly fed, grow rapidly, gaining in live weight as well as price. This makes a splendid way to market clover and early cut hay as well as oats, peas and corn grown on the farm. It will pay to use some bran or oats and a little oil meal with the above; also plenty of roots or silage. At prevailing prices cottonseed meal is excellent. No stock need more careful looking after. They should be graded as to size and vigor in small flocks, fed three times a day

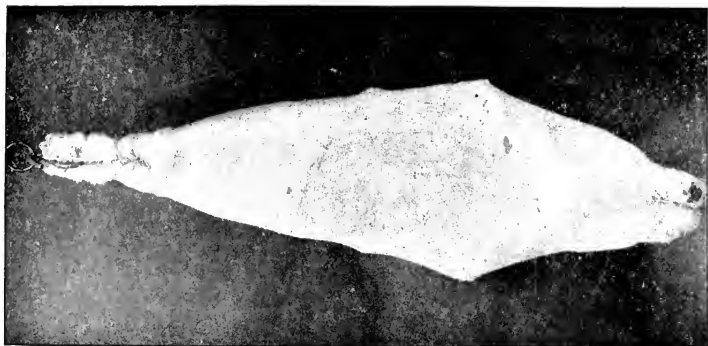


FIG. 185. CARCASS SERVED IN BURLAP
READY FOR SHIPMENT



FIG. 184. THE CARCASS PROPERLY SPREAD
OVER THE CARCASS

no more than they will clean up quickly so as to come hungry to the next feed. If by chance they are overfed, it is better to skip a feeding and then feed lightly until their appetite is restored. They may be shipped at any time when fat and the market is right, either before or after shearing.

The Hebrew bard sang "All we, like sheep, have gone astray." This has been and is too true all over our state in regard to this great neglected industry. May the day return when, "In green pastures beside the still waters" our sheep may be multiplied an hundred-fold.



SWINE

H. B. HARPENDING

Breeder of Berkshire Swine

BERKSHIRE

Originating in Berkshire County, England, more than 100 years ago, the Berkshire is probably the oldest distinct breed of swine. A comparison of the old English Berkshire with the Berkshire as bred in America today, would be a revelation of the possibilities obtainable by careful selection and breeding of different types to secure a desired result.

The Old English Berkshire was large in size, long and deep in body with good hams and good constitution. They possessed

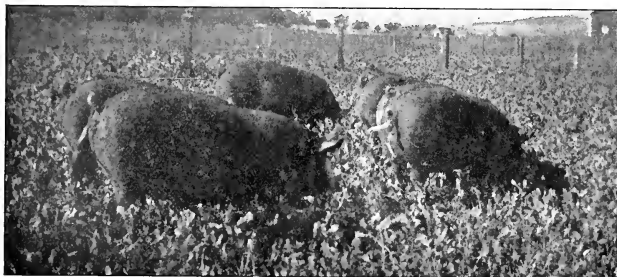


FIG. 186. BERKSHIRE SWINE. OWNED BY H. C. AND H. B. HARPENDING, DUNDEE, N. Y.

fairly good bone, thick shoulders and good bacon sides with a quality of meat which was excellent for that day. They were of a sandy or reddish brown color, spotted with black, with a coat rather long and somewhat curly, having some bristles; and their ears were large, coarse and flopping. They were poor feeders and slow maturing.

This foundation stock was crossed with individuals of the Siamese, Neapolitan and Chinese breeds from southern Europe, which were of the quick maturing type but smaller in size. The result

was a type very like the standard Berkshire of today. However, as is often the case, some breeders noting the good results from crossing with the southern blood carried it too far. This accounts for the short, chunky, undersized Berkshire which a few years ago brought the Berkshire into disrepute among breeders who desired size and quality combined. Fortunately, other breeders with more discrimination came to the rescue, with the result that we have the long body, deep side, short, broad, dished-faced, early maturing Berkshire of today. Combined with the enormous size of the foundation Berkshire stock, is the fine quality and docile disposition of the southern infusion.

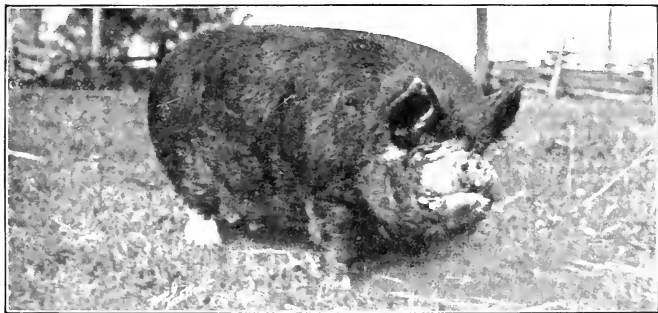


FIG. 187. A TYPICAL BERKSHIRE BOAR. RAISED BY H. C. AND H. B. HARPENDING, DUNDEE, N. Y.

The Berkshire of today has long held its place as unsurpassed in the production of meat and lard of the highest quality and with a large proportion of lean meat which brings it into popular favor as a bacon hog. No other breed can be more easily fattened at any age. It is very prolific and does well in any climate. The sandy or reddish color has been superseded by a black coat with six white points, the large drooping ear by the small erect ear set wide apart; the snout is very short, the face broad and well dished, neck short, chest broad and deep, legs fine, strong and short and set wide apart, bone fine and very hard and the coat fine and silky with no bristles even on the boar. The ham is deep and thick extending well up on back and holding thickness well down to hock.

Berkshires were imported from England as early as 1770. Bred pure for many years, they are noted for their prepotency. They are hardy in constitution and active in disposition and are good grazers; in fact, they reach their highest degree of excellence when developed with moderate facility for range. These qualities combined with the superior quality of meat produced, and the tractability of the mature animals, make the breed a favorite with the breeder and the butcher in every section of the country.

POLAND-CHINA

The Poland-China is distinctively of American origin developed under ideal American conditions. The foundation stock traces back to old Berkshires and old Bedfordshires imported early in the nineteenth century or earlier. Crossed and recrossed with other types, few families were pure enough in blood to produce even a partial likeness to themselves. The prevailing type was coarse, rough, slow-maturing, spotted with various markings, very prolific

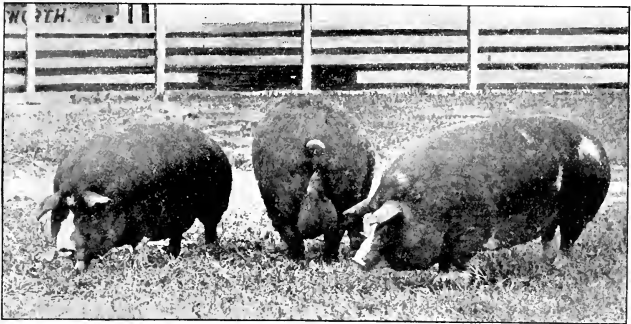


FIG. 188. POLAND CHINA SWINE. BRED AND OWNED BY R. F. SEELEY, WATERLOO, N. Y.

and free from disease but not maturing into marketable pork until three or four years of age. About the middle of the nineteenth century, the breeders of the Miami Valley, Ohio, had succeeded in producing a distinct type, and in the early sixties the Essex and black up-eared Berkshires were crossed with this type, giving the Poland-China quicker maturing and better feeding qualities.

From this time, Mr. Dawson says, no outside blood has been introduced into the Poland-China breed and the main effort of the breeder has been to intensify and fix the color and type. The Poland-China of today, as we all know, is black with six white points, an ear that is two-thirds erect and one-third dropping.

At present there are two distinct types of the Poland-China breed. Some breeders have for some years sought to develop quality, early maturity and smoothness of form and have followed this standard to such an extent that this strain became smaller in size, shorter of body and less prolific and less valuable for pork production. Other breeders, noting these tendencies, have been breeding for size, scale and prolificacy without regard to many of the fancy points, with the result that they have secured hogs of enormous size but somewhat lacking in quality.

The Poland-China breed of the finer type is smooth with thick broad sides; broad, heavy hams extending well down on the hock, the legs short, set well apart; the tail fine, the head broad, slightly dished face tapering gradually to end of nose which is of medium length, back broad and straight or slightly arched, neck short and wide. The large type of Poland-China is longer in body and also longer in the legs with a heavier ear. With greater size, the flesh is coarser grained and hence not so good in quality.

The Poland-China belongs primarily to the fat producing type of swine, its phlegmatic temperament rendering it averse to much activity. For this reason, it ranks high in pork and lard production. However, some families have been developed for bacon production with a degree of success.

CHESTER WHITE

Uncertainty shadows the early history of the Chester White, although we know it to be of American origin with Chester County, Pennsylvania, for its birthplace. Being one of the oldest distinct breeds of swine in America, it is without doubt a result of crossing between some of the native white hogs of Pennsylvania, the old Bedfordshire and other white swine imported from England about 1818. These were generally white in color, although some had black or blue spots. By careful development, a type white in color and free from spots was obtained, but they

were either large, coarse and slow maturing; or small, compact and quick-fattening. However, during the past thirty years, great improvement has been made. The size varies from a very



FIG. 189. TWO-MONTH-OLD O. I. C. SOWS. OWNED BY B. F. PHILLIPS & SONS, EAST BLOOMFIELD, N. Y.

large hog to one of medium size, and in conformation some are extremely long, coarse individuals while others are much neater



FIG. 190. O. I. C. BOAR, TWELVE MONTHS, WEIGHT 325 POUNDS. OWNED BY B. F. PHILLIPS & SONS, EAST BLOOMFIELD, N. Y.

in appearance, rather blocky in form, with heavy hams and smooth shoulders, back broad and smooth; medium length snout,

not sharply dished face but tapering to a somewhat pointed nose. The ear droops similar to that of the Poland-China, being erect part of its length with the tip drooping.

There are different strains of the Chester White breed as is true of most swine families. Notable among these are the plain Chester White and the O. I. C., meaning "Ohio Improved Chester." Some of these are found with black spots in the skin which are covered sometimes with white and sometimes with black hair. Some breeders consider these two separate breeds but they are exhibited in the same class at state and other fairs and there is no appreciable difference between them.

Like the Poland-China, the Chester White is particularly adapted for pork and lard production. They are sluggish in disposition, not inclined to much activity, possess good feeding qualities and make rapid growth, producing a very large proportion of fat meat to the amount of lean meat in the carcass.

CHESHIRE

Cheshire sows imported from England and mated with boars of several different lines of breeding resulted in the Cheshire breed, formerly called the Jefferson County hog, because of the fact that breeders in that locality were the prime movers in developing the new breed. Yorkshire, Suffolk and Cavanaugh blood was crossed with the English Cheshire and inbreeding practiced to develop the type desired.

The Cheshire is a white hog, rather long and cylindrical in body, rather long legs, fine but strong in bone. The snout is of medium length and slender and the face slightly dished. They mature early and are prolific and usually make good mothers. The flesh is of good quality, between the bacon and the fat or lard type, leaning rather toward the bacon.

While the above seems to be the generally accepted status of the Cheshire swine, there are some well-known authorities who hold that the Cheshire is simply a derivative of the Yorkshire, the variation being a result of inbreeding and crossing. The best types, except for the snout and color, resemble the most approved type of Berkshire; and for this reason has been facetiously styled by some the "White Berkshire."

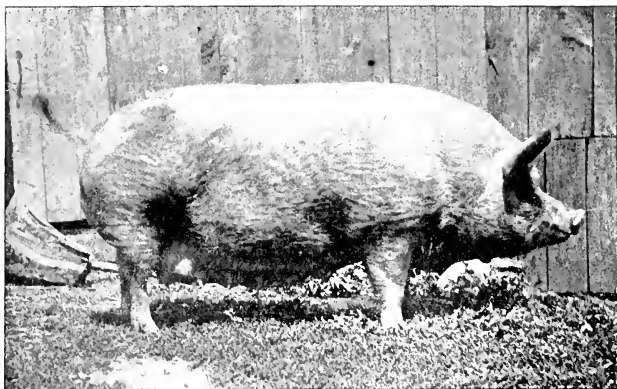


FIG. 191. CHESHIRE SOW "BEAUTY." BRED AND OWNED BY THE STATE COLLEGE OF AGRICULTURE, CORNELL UNIVERSITY

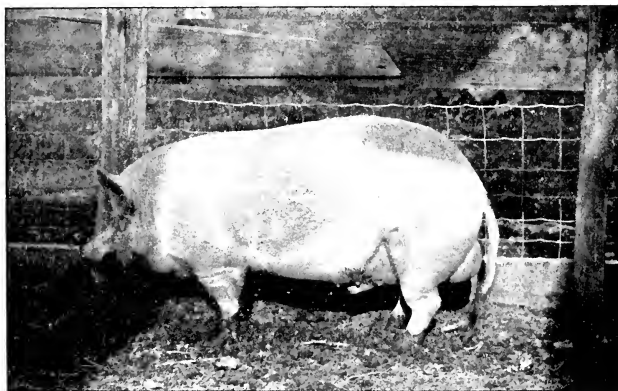


FIG. 192. CHESHIRE BOAR "WHITE CHIEF." BRED AND OWNED BY THE STATE COLLEGE OF AGRICULTURE, CORNELL UNIVERSITY

DUROC-JERSEY

If some writers are to be credited, the Duroc-Jersey occupies a leading place in point of ancestry and length of pedigree, some red hogs from which they might have descended having been brought to this country by Columbus. Certain it is that some of the ancestors of this breed were brought to America by slave traders early in the seventeenth century. The breed has been known at different times by many names, Red Hogs, Red Berkshires, Guinea Reds, Jersey Reds, Red Rocks and Durocs.



FIG. 193. DUROC-JERSEY SOW AND PIGS. OWNED BY C. E. BARNES, OXFORD, N. Y.

The Jersey Reds bred in New Jersey were of extreme size but slow to mature. In conformation long in body with good chest capacity, coarse in bone and flesh. The hair was inclined to stand erect and was sometimes bristly on the back, the ears large and lippy, the legs long and the tail heavy and bushy. The main points of value were the extreme size and strong constitution.

The Durocs were bred largely in Saratoga County, N. Y., later, notably by the late F. D. Curtis; and were medium in size, compactly built, with short legs, neck short and thick, ears light,

head rather small, full smooth shoulder, back strong and wide with plump full hams.

About 1833 the breeders of these two types of red hogs joined forces with a view of producing a type combining the best features of both varieties. They also crossed these hogs with some red hogs imported from Spain about that time and later with others imported from Portugal. The type produced by these crosses became a distinct breed but was still known by several different names. The breeders finally merged into two factions, one adhering to the name Jersey Red and the other to the Duroc until 1883 the American Duroc-Jersey Swine Breeders Association was formed and the name Duroc-Jersey adopted.

The Duroc-Jerseys belong to the fat or lard type of swine although active in disposition. They are considered good grazers and good feeders. There has been marked improvement in the breed during the past few years. The large lopped ear of the Jersey Red is still apparent, but the ideal individual has a long, deep body, broad back, the neck is short and thick and the face slightly curved and nose rather long. The head is small and eyes set wide apart. The legs medium in length and size, color varying from dark cherry red to light yellowish red. The hair medium fine but inclining to bristles on top of shoulders. While, as noted, many improvements have developed during recent years, these have been to some degree at the expense of size, and the Duroc-Jersey of today is diminishing in size, the enormous rangy individual of the original Jersey Red type having disappeared leaving a well built animal shorter in body, compactly built, with medium short legs similar in conformation to the Poland-China. They are very prolific, and excellent mothers.

FARM POULTRY

Dr. ELLIS M. SANTEE

Director of Agriculture, Good Will High School, Hinckley, Me.

Great changes have taken place during the last few years on the New York State farms with reference to poultry. This improvement has been brought about principally by good prices and a knowledge of better methods. The nearness to the large cities and lower express rates make it possible for the New York State farmer to profitably compete with the poultrymen of the Middle West who have the cheaper food but the longer haul and greater cost of transportation. The state experiment stations, led by Professor Rice at Cornell, have done much to cheapen the cost of production and increase returns on poultry products.

BREEDING

Too much attention has been paid to fancy points and too little to the utility side of the problem. For many years it has been



FIG. 194. LIGHT BRAHMA HEN

commonly accepted as true that a hen could not profitably be kept longer than the end of her second laying period. Professor Rice has demonstrated that a properly developed hen may be kept four and possibly five and six years. Two factors have entered into a lowered constitutional vigor in many of our flocks which manifests itself first in the large number of dead germs found in the shell when attempting to incubate the eggs. The hatching of pullet eggs and the indiscriminate selection from the egg basket for incubation at a time when a hen is laying, if ever, during the year, are the causes which probably furnish most of the trouble. The proper handling of pullets requires that they be forced to

early production before they have matured and that they be kept at it as much as possible during the following year. Where this method is followed, she is in no physical condition to produce the strong, vigorous germ that should be looked for for incubation, and no matter how well-bred she may have been, she should not be expected under these circumstances to reproduce her own good qualities in the offspring. The method followed on the best poultry plants today is to force the pullets to the largest possible production, selecting those that laid first, kept longest at it, moulted latest, and produced the most eggs, for the breeding pen the following year. They are then given a long rest and brought into laying about the time, or a little before the incubating season opens. This method, if followed a few years, will breed up a heavy laying strain of almost any variety or breed.

BREEDS

A wrong impression is very prevalent as to the value of various breeds. A strain of any breed is valuable in just the proportion in which care is exercised in its development. All of the breeds have been developed from the one old jungle fowl. It has simply been a matter of selection and intensifying the desired quality. It is just as easy to select for large production as it is for a given shape or feather. The White Leghorn has come to be recognized as the egg breed for New York State, due probably to the fact that she produces a large white egg which always commands a premium in New York City and many of the other cities of the state. But this does not mean that all white leghorns are desirable. There is no recognized breed that is so poor that a well-developed strain of it would not be preferable to a poorly developed flock of white leghorns. It is probably true that under present conditions and prices of food, it will be more profitable for the New York State farmer to strive for eggs rather than meat or

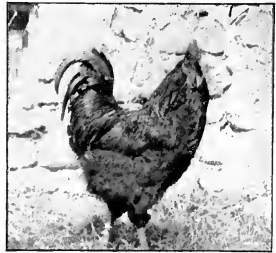


FIG. 195. BLACK ORPINGTON COCK

meat and eggs. Where the fowl for meat is desired, some one of the American breeds will be found more profitable than any of the Mediterraneans of which the leghorns is the chief type. However, if it is a question of broilers, a leghorn will produce any weight up to about a pound and a half for less than any of the so-called meat breeds. It is customary when seeing a large



FIG. 196. LIGHT BRAHMA COCK

producing flock on a neighbor's farm, to feel that a mistake has been made in the selection of our own and a change made to a flock of the same breed and variety as the neighbor has; many times going to some other place for the foundation stock. The matter of prime importance is, first to select the variety which we like best, that we will take best care of, that we will show to our

friends with the greatest amount of pride, and then develop a heavy laying strain, making production the first requisite instead of feathers and shape.

Probably the best method is to select a hen of known large production and a male bird of the same variety, having a mother of equally large production, and from this one pair, by careful line breeding, mating the cock to his own daughters the second year, and the hen to one of the cockerels the same year. In this way two lines of breeding may be established and one need never go outside for a single drop of new blood.

INCUBATION

In selecting eggs for incubation, not only the parent stock should be right, but the egg itself should be right and properly cared for after the selection is made. The large egg not only produces the large chick but the weight of the chicks at six weeks of age will vary in proportion to the weight of the eggs from which they were hatched. The ill-shaped egg is apt to show itself

in the product of the offspring and should not be selected for the incubator. Eggs begin to incubate at 70 degrees Fahrenheit, therefore, it is very important that they be kept at a temperature below that point while they are being saved for hatching. A dry, cool cellar is an ideal place in which to store them; a damp mouldy one lowers the hatchability of the eggs. Whether a hen or an incubator shall be used will depend upon the number to be hatched and the time of the year they are wanted.

There is no best incubator. Any one of the better-known makes will be found satisfactory. Run it according to the directions the maker gives. He is in a better position to know his machine than anyone else. Do not be in a hurry to get the chicks into the brooder. Nature furnishes their food supply for at least forty-eight hours, and no food or water should be given them under thirty-six hours. Never open the machine after the eighteenth day until the hatch is fully completed and do not let your sympathy impel you to help a struggling chick out of the shell. If it can't get out alone it will never be worth raising.



FIG. 197. PARTRIDGE COCHIN COCK

BROODING

Be sure that the hover furnishes a temperature of 100 degrees before the chicks are placed in the brooder, and also that there is a place where they may go, having a temperature of not over 70 degrees. After the first week the hover temperature may be lowered to 90 degrees but never lower until they have feathers to protect them. Filth and mortality are twins. Keep the brooders clean and disinfect often.

REARING

After the chicks are fully feathered they suffer much from the excessive heat of summer. A shady place should always be ac-

cessible to the growing chicks. A corn-field is ideal. It not only furnishes the shade but also the bugs and worms and protection from hawks and crows.

Separate the cockerels and pullets at the earliest possible moment, selecting the promising cockerels for breeders and fitting the rest for market before they have cost more than they will bring. The early hatched cockerel will bring fifty cents when he weighs a pound and a half. Later on when he weighs from two and a half to three pounds he will bring about fifty cents. After he has been kept until the holiday time, weighing about four or five pounds, he will bring in the neighborhood of fifty cents, then why give him that extra feed and care.

The pullet that for any reason is checked in her growth will never make a profitable hen. They should be kept growing and forced to the earliest possible production consistent with the maturity of their bodies.

HOUSING

Up to within a comparatively recent period, a visit to any given number of poultry houses would have shown almost if not

quite an equal number of designs, but we are coming to a type of laying house which is becoming very prevalent and is probably destined to become more so. A hen being the highest temperatured animal on the farm requires the most oxygen to maintain that temperature.



FIG. 198. WHITE WYANDOTTE COCK AND HEN

About a dozen years ago when the muslin ventilation was first used it was looked upon to solve the ventilating problem but since that time experiments have shown that a house with the entire front above from two feet to three feet from the floor is preferable to the one having the muslin front. In this type of house the muslin curtain is furnished to be closed only during stormy weather. This type of house also

requires the tight partitions and a depth of not less than sixteen feet, preferably twenty, with the perches in the extreme back of the pen. This also enables us to solve another problem — that of labor — since the larger unit, at present cost of labor, is more profitable than the smaller one, and it may successfully be kept in the open-front house while it could not be thus kept in the old-style warm house. The first impression to one who has never tried the fresh-air house is that wattles and combs would be frozen the first night. The fact is, that even leghorn combs withstand the severest weather in this type of house if they have become used to the cold by being kept in the open front house from early in the fall. A hen cannot do her best without sunlight and plenty of it; therefore, if the open front house is not used, a large window should be provided in the east corner of the south side of the house. It is important that the floor of the poultry house be smooth, tight, warm and vermin proof. No other material meets all of these requirements like concrete, but it is important that the concrete floor in the poultry house be insulated to keep down the moisture and consequently the cold. The best and most economical method of building a poultry house floor is to first smooth off the ground and then lay on a coat about one inch thick of concrete, made by mixing gravel, sand and cement, about five of gravel to three of sand and one of cement, making it rather wet, smoothing off with a hoe or a float and then rolling on single ply tar felt roofing, then covering this with about two inches in thickness of the same concrete material having the gravel not too coarse, mixed very wet and smoothed off with a float.

FEEDING

For many years on my own farm at Cortland we have followed the plan adopted by Professor Rice at Cornell and have found it so satisfactory that it has been adopted here at Good Will High School, and is here given as the best with which I am familiar.

CORNELL RATION FOR CHICK FEEDING

Mixture No. 1		THE RATION		Mixture No. 2	
Rolled oats	8 lbs.	Wheat (cracked)	3 lbs.		
Bread crumbs or cracker waste	8 lbs.	Cracked corn (fine)	2 lbs.		
Sifted beef scrap (best grade)	2 lbs.	Pinhead oatmeal	1 lb.		
Bone meal	1 lb.				

Mixture No. 3

Wheat bran	3 lbs.
Corn meal	3 lbs.
Wheat middlings	3 lbs.
Beef scrap (best grade).....	3 lbs.
Bone meal	1 lb.

Mixture No. 4

Wheat (whole)	3 lbs.
Cracked corn	2 lbs.
Hulled oats	1 lb.

Mixture No. 5

Wheat	3 lbs.
Cracked corn	3 lbs.

THE METHOD**1 to 5 days**

Mixture No. 1, moistened with sour skimmed milk, fed five times a day; Mixture No. 2 in shallow tray containing a little of No. 3 (dry) always before chicks. Shredded green food and fine grit and charcoal scattered over food.

5 days to 2 weeks

No. 2 in light litter twice a day. No. 3 moistened with sour skimmed milk, fed three times a day; No. 3 (dry) always available.

2 to 4 weeks

As above, except that the moist mash is given twice a day.

4 to 6 weeks (or until chicks are on range)

Reduce meals of *moist mash* to one a day; Mixture No. 4 in litter twice a day; dry mash always available.

6 weeks to maturity

No. 3 and No. 5 hopper fed. One meal a day of moist mash if it is desired to hasten development.

FURTHER DIRECTIONS

1. Provide fine grit, charcoal, shell and bone from the start.
2. Give grass range or plenty of green food.
3. Have fresh, clean water always available.
4. Feed only sweet, wholesome foods.
5. Avoid damp and soiled litter.
6. Disinfect brooders frequently.
7. Test all beef-scrap before feeding.
8. Keep chickens active by allowing them to become hungry once daily.
9. Feed *moist* mash sparingly.
10. Keep *dry* mash always before the chicks.

CORNELL RATIONS FOR LAYING HENS

The following whole grain mixture is fed morning and afternoon in a straw litter:

BY WEIGHT**Winter**

Wheat	60 lbs.
Corn	60 lbs.
Oats	30 lbs.
Buckwheat	30 lbs.

BY WEIGHT**Summer**

Wheat	60 lbs.
Corn	60 lbs.
Oats	30 lbs.

BY MEASURE**Winter**

Wheat	32 qts.
Corn	36 qts.
Oats	30 qts.
Buckwheat	20 qts.

BY MEASURE**Summer**

Wheat	32 qts.
Corn	36 qts.
Oats	30 qts.

The following mash is fed dry in a hopper kept open during the *afternoon only*:

BY WEIGHT		BY MEASURE	
Winter and Summer		Winter and Summer	
Corn meal	60 lbs.	Corn meal	57 qts.
Wheat middlings	60 lbs.	Wheat middlings	71 qts.
Wheat bran	30 lbs.	Wheat bran	57 qts.
Alfalfa meal	10 lbs.	Alfalfa meal	20 qts.
Oil meal	10 lbs.	Oil meal	8 qts.
Beef scrap	50 lbs.	Beef scrap	43 qts.
Salt	1 lb.	Salt	½ qt.

The fowls should eat about one-half as much mash by weight as whole grain. Regulate the proportion of grain and ground feed by giving a light feeding of grain in the morning and about all they will consume at the afternoon feeding (in time to find grain before dark). In the case of pullets or fowls in heavy laying, restrict both night and morning feeding to induce heavy eating of dry mash, especially in the case of hens. This ration should be supplemented with beets, cabbage, sprouted oats, green clover or other succulent food, unless running on grass covered range. Grit, cracked oyster shell and charcoal should be accessible at all times. Green food should not be fed in a frozen condition. All feed and litter used should be strictly sweet, clean and free from mustiness, mold or decay. Serious losses frequently occur from disease, due to the fowls taking into their bodies, through their intestinal tract or lungs, the spores of the fungus causing molds.

HOME TOPICS

INTRODUCTION

The day has gone by when we thought of the "women's session" of an institute as nothing but an exchange of recipes and a discussion of the details of housekeeping. Today, the home-maker's session includes men as well as women, for more and more are we coming, as Woods Hutchinson says, "to look upon the human machine, whether our own or that of our fellows or our employees, as the modern scientific farmer looks upon his soil — as a field for investment, upon which is to be spent as much capital and labor as will yield a profitable return." Such investment in the case of the human field consists "not alone of feeding, but of housing, of working, of sleeping, of resting, and of playing, as well."

In proportion as men have realized that it is as poor business to neglect the field of home-making as any other field of the farm, the number of men who attend the home-makers' sessions has increased, and they no longer come to sit indulgently through the "women's discussions," but to take an active part in them. It proves their belief that the field of home-making requires the joint study and effort of both partners in the business. The reports of addresses given at home-makers' meetings, therefore, are no longer to be regarded merely as a "woman's page," but as of equal interest to men and women alike. Year by year the results of such cooperation will become more apparent as each individual home yields a higher and higher return of health and efficiency to the makers of that home, the community and the world.

BOVINE TUBERCULOSIS AND ITS RELATION TO INFANT MORTALITY

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The bacillus or germ of tuberculosis, like that of some other forms of disease, is subject to differences of growth and development depending on its host.

There are at least four kinds of tubercle bacilli known; each differing from the other in ways known to the scientist, but all with common characteristics and with like methods of development. All forms of the bacillus are destructive to the life of the creature harboring it and it is in all its forms capable of transmission from the sick to the well by the diffusion of the germ in various ways. These four forms of tuberculosis are the *human*, the *bovine* (infecting cattle and other animals), the *avian* or type found in birds, and another form which infects cold blooded animals.

It is probable that all these forms of the bacillus had a common origin and have been differentiated by long periods of growth in their different hosts.

Experimental evidence furnishes ample proof that bovine tuberculosis is easily transmitted to man while the human type of the disease may, with more difficulty, be transmitted to cattle and other animals.

Scientists are now able to determine whether the germ, causing a given case of tuberculosis, is of the human or bovine type, and a considerable number of statistics has already been collected. These statistics show that most of the cases in the human family which are caused by the bovine germ are in children who are bottle fed or who have lived largely on milk after the period of nursing is past. These cases are frequently of the bones and joints, causing the deformities commonly seen in children. They are frequently, also, of the intestinal and glandular types, while cases of disseminated or miliary tuberculosis are not uncommon.

¹Dr. Fraser, in the Journal of Experimental Medicine of

¹Therapeutic Gazette, December, 1912.

October 1, 1912, proves that "in Edinburgh at least, a large proportion of bone and joint tuberculosis in children is due to infection by the bovine bacillus, and that this bacillus enters the body by practically only one route—that is, by the stomach—and in one medium, namely, cow's milk. In the comparatively limited number of cases in which the human bacillus was found to be the cause of the trouble there was also found a definite history of pulmonary tuberculosis affecting some one else who lived in the house, and all the evidence went to prove that the infection had been a direct one from the patient to the child. This research as well as a number of others which have preceded it emphasizes the importance of careful supervision of milk which is ingested by adults and children. Indeed, it would seem evident that if milk from tuberculous cattle can be excluded from the diet of children the number of cases of bone and joint tuberculosis in this class of patients can be very greatly diminished, and if care is used as to direct infection from tuberculous adults these distressing maladies of childhood which destroy usefulness or life can be almost entirely set aside."

Dr. Wm. H. Park of New York City says that ten per cent. of the samples of milk taken from cans in that city in 1910 contained tubercle bacilli and that from ten to twenty per cent. of all the cattle supplying the city were at that time infected with the disease. He gave the following report on a series of autopsies in an address before the Academy of Medicine May 12, 1910:

"Up to the present we have completed studies on 434 cases. Of these 297 were adults, and of these but one case, which had a tuberculous deposit in one kidney, as the only lesion, was due to a culture of the bovine type. The 278 cases of pulmonary tuberculosis were due in every instance to the human type. Twenty-two of the 84 very young children and infants tested were infected with the bovine type, or about twenty-four per cent. Of 40 fatal cases there were four that died because of bovine infection. Of the 434 cases, 296 were over sixteen years of age; of these, but one was due to bovine infections. There were 54 cases five to sixteen years of age. Nine of these were due to bovine infections. There were 84 cases under five years; 22 of these were due to bovine infection.

"Our total results indicate that about three per cent. of all tu-

bereulosis existing in New York City is due to the bovine type of bacilli, and therefore caused probably by milk infection and that something over two per cent. of the total deaths from tuberculosis are due to bovine bacilli. In little children probably 10 per cent. of the total deaths are due to the bovine type. The percentage of tuberculous glands in young children due to bovine bacilli is fully thirty per cent.”

The following table compiled by Dr. Wm. H. Park and Dr. Chas. Krumwiede shows “ The Relative Importance of the Bovine and Human Types of Tuberele Bacilli in Different Forms of Human Tuberculosis.”

Percentage of Bovine Infection	Adults 16 years and over	Children 5 to 16 years	Children under 5 years
Diagnosis			
Pulmonary tuberculosis	0	0	0
Tuberculosis adenitis, cervical.....	4	37	57
Abdominal tuberculosis	16	50	68
Generalized tuberculosis	3	40	26
Tubercular meningitis (with or without gen- eralized lesions)	0	0	15
Tuberculosis of bones and joints.....	5	3	0

¹Dr. Knopf, of New York, says that “ in children * * *, bovine tuberculosis is responsible for a very large percentage of cervical, alimentary, and bone and joint tuberculous affections; and since milk is the principal food of infants and young children we must hold the tuberculous cow responsible for the large percentage of tuberculosis in childhood.”

There is much apprehension felt among farmers concerning the economic loss caused by tuberculosis in eatle and methods of preventing the spread of the disease are eagerly sought. One of the most feasible plans proposed is to cause all butter factories and creameries to sterilize their skimmed buttermilk or whey before returning it to the farmers.

We have so far learned of no general effort to protect the children of the farmers themselves from the same danger. Unlike the germs of filth, the germ of tuberculosis does not increase rapidly on its way from the farm to the city. On the contrary there is no evidence to prove that it ever multiplies under such conditions and we know positively that both the number and the

¹ “Primary Sources of Tuberculous Infection,” read at the annual meeting of the Medical Society of the State of New York at Albany, April 16, 1912.

virulence of the germs are greatly diminished by the time passed after milking and by the conditions under which milk is shipped and manufactured.

The conclusion is therefore evident that farmers' children who drink milk fresh from the cow — often warm — are (in case of an infected supply) taking in larger numbers and more virulent bacilli than city children to whom the same supply is sent.

It is only the favorable environment of the country child which prevents more frequent development of the disease.

This is a phase of the subject which has received but little attention but it should arouse farmers to a more lively appreciation of the dangers resulting from infected cattle.

It must be born in mind that many children dying of marasmus, of bronchitis, of pneumonia, of measles and whooping cough are really victims of an antecedent tuberculosis.

Autopsies are not common in the country and statistics must be gathered from the cities but they are not the less convincing to the medical world.

¹Dr. Moore, professor in the Veterinary College of Cornell University, says that he "personally knows of the testing of many herds in which the diseased animals have ranged from ten to ninety per cent. of the entire herd. It should be stated that the owners of several of these did not believe before the test that tuberculosis existed among their cattle."

A large proportion of infected animals are expelling the germs from the mouth or the intestinal canal. Every such animal is liable to infect indirectly any milk drawn in the stable.

A smaller proportion of infected animals have lesions in the udder from which living and virulent germs are passed directly into the milk stream.

Since there is no better known test of the presence of tuberculosis in a given animal or herd except that known as the tuberculin test, no man who has not used that test is certain that his herd has no infected member or members.

And since the bovine form of tuberculosis is readily transmitted to children, no man who gives his children milk from an untested herd or cow can be even reasonably sure that he is not infecting them with this most insidious and deadly disease.

¹"The Control of Bovine Tuberculosis," read at the meeting of the New York State Dairyman's Association, Elmira, December, 1906.

HOME ECONOMIES

MISS ETTA E. MONTGOMERY

Farmers' Institute Lecturer

In discussing the subject of home economies it is not our purpose to consider those relating to finance, but rather to deal with those which are less often definitely studied in the farm home.

First, the economy of health should be mentioned, as this is of prime importance. How many of those who are caring for families are studying the requirements for the health of that family, and the best means for providing these?

Dairymen are deeply interested in learning how best to provide a balanced ration for the cow; poultrymen read studiously how to feed the laying hen; hogs, even, are scientifically reared. We listen to lectures regarding the breaking of colts so as not to spoil their disposition, but do we find fathers and mothers seeking as anxiously to learn how to feed the growing boys or girls, and above all to correct and advise them so that their best qualities are developed and they are fitted to undertake their life work, with strong frames and quick, well-controlled minds?

When a child is born with a good constitution — and I believe this to be every child's right — then the growth and development of that child rests upon right food, right exercise, fresh air and sanitary conditions.

Our bodies need certain amounts of protein foods, such as meat, beans, milk, eggs, cheese and other similar foods, to repair the wastes of the body tissues, and to make the lean meat or muscles; we need the sugar, fat and starchy foods to supply heat and energy to the body; the bone making material is found in the salts and other minerals. It is a study in which one may become tremendously interested when working out special problems.

It seems almost unnecessary to even mention the importance of having pure air in the home, but when we find sleeping room windows nailed down it appears that the time for calling attention to this has not gone by. The demanding of fresh air is no longer called a "fad." We are quite generally convinced that the once-called "fresh air crank" is only a person with common sense. If

it is necessary to have the best system of ventilation in the stables, is it not quite as essential to have a properly ventilated home?

If we would do all possible to secure health in the home, one thing should not be omitted — we should be sure that the water supply is pure. Dug wells should be so protected that no surface water or other sources of impurity can leach into them. There should be a proper place for the disposal of all sewage. One writer has truthfully said, “many pray for health, when the most that is needed is well-cooked food and a plumber.”

The next economy we would mention is that of work, and when speaking of this we realize that there is plenty of work to be done on a farm, and in many cases there is insufficient help for its accomplishment, but might not this condition be greatly relieved if we would discriminate between the essentials and the non-essentials in housework?

We have a right to expect people to work and to be happy in their work. I can think of no one who is doing things worth while in this world who is not working. Our attitude of mind has much to do with the accomplishing of our work, and if we would rightly enjoy our daily duties we must recognize the fact that “work is not a penalty, but a spiritual opportunity of the highest order.”

Simplicity of work and no unnecessary work is a good motto. Are we doing useless things? Did you ever take inventory of your common tasks and find if every one of them had any real reason for being done? Take stock of the things in one room and see if there is not some task which may be cut from the list. I made a trial of this in my own home. In one room, where there were many things to be dusted and cared for there was a “whatnot.” Now you all know what is generally found on a whatnot and we had them all on ours. I looked it over for some time and then decided that it was not pretty or useful and that nothing on it was pretty or of use, so the “whatnot,” the things on it and I went upstairs to the attic one day and I came down alone. I have been in homes where there were wall shelves with the most useless things upon them. One woman had some dried grass in a vase, utterly unornamental, but which she was caring for, thereby adding to her work. Why not do away with the things which will improve our rooms by their absence?

When he have eliminated all unnecessary work let us be willing to share what remains to be done. Did you ever know a family martyr ? One of those persons who is always complaining of the many things she has to do, says her life is "all drudgery" and so on, and on, and on, but let anyone offer help and it is promptly refused. She can "do it quicker than you," she "has one way of doing work" and other excuses are given in her refusal. Such people seem to revel in the belief that they are abused, yet resent the idea that things might be made easier for them. I have no patience with self-inflicted martyrdom. What does it matter if the work is not done exactly one way, as compared with gaining time for needed rest, especially so if nervous complaining is done away with.

Is it essential that every kitchen towel be ironed ? Clothes are never so sweet smelling as when newly taken from the line, and many of them, if neatly folded, will do service just as well as though time and work had been spent to iron them. After all, the great endeavor should be to make the things we use serve us and not rule us.

Woman's work in the home is just as much an economic factor to be considered as is any other kind of work. We may not think of it in terms of dollars and cents, and it is well we do not, for the ability to acquire money falls far below the ability to make and keep a home. When I say "home," I do not mean a place to stay, with the house always in order, but a home in the truest sense of the word. Housekeeping is not home-making. Did you ever visit one of these housekeepers ? You are met at the door, welcomed, and are then shown into the best parlor, after which the hostess excuses herself and goes into the kitchen. You sit in all the different chairs, being careful not to wrinkle the tidies ; you look at the photograph album, study the pictures and wish someone would come. Finally supper is ready. The hostess is too tired to eat, so spends her time telling how little there is to offer you, that the bread is not so good as common, and she does not know what is the matter with the cake. You keep telling how lovely and delicious everything is and then you go home. Her chief aim had been to provide physical comfort and the social element had been entirely overlooked, while you had come for a visit, not a meal. We each believe our home to be the best place

on earth, and that our family is the best family, then is it not the highest compliment we can pay our friends to take them into our homes as one of our own? Is it not better to spare ourselves needless worry and labor, and our friends the embarrassment of feeling responsible for this, and, without fearing criticism, make the most of every opportunity for social enjoyment.

If work is a science, so resting may also be considered one. Do we really rest in our leisure moments? I have seen women work till nearly exhausted and then, when the chance came for a few moments pause, seat themselves on the edge of a chair, have every nerve and muscle tense, and tell over the things remaining to be done. There was no resting about it, only a stopping. When I rest I am reminded of an old-time rhyme about an "old woman who always was tired, she lived in a house where help was not hired" and how, when she came to die she made this request, "don't mourn for me now, don't mourn for me never, I'm goin' to do nothin' forever and ever." Just settle down relaxed, in a comfortable chair and imagine there is never going to be any more work to do. If afraid of sitting too long, fix the time to be spent resting and set the alarm clock at that hour.

We can use the alarm clock more than we do. When we have any writing which will need concentrated thought, and have only a limited amount of time in which to write, the alarm clock may be used to signal us. It may also be used to time our baking of bread or cake.

The saving of time is probably thought of less in the farm home than in those of town or city, yet, were more attention paid to this there would be greater opportunities for reading, study and social enjoyment. We need to plan our work carefully and well. We also need to study the saving of motions. In many of our large factories men are being employed, whose whole duty is to observe operations and methods to see where time may be saved. How many women have ever studied how to save motions when washing dishes? Merit is being judged by the standard of time today. I recall hearing the question asked, regarding two surgeons, "Which is the better?" One of them was named and then came the question, "How much better?" and the reply was,

“Seven seconds.” Those seven seconds might mean a life some day. It is not a trivial thing to save time—it is thus we multiply our opportunities.

Our kitchens are our workshops, and they are the most important workshops in the world, for the health of the nation is coming out of our kitchens. Let us save time by having things as convenient as possible. See that the utensils most used are handily placed; have a stool in the kitchen and rest when you may. Fireless cookers, vacuum cleaners, bread mixers, meat grinders and gasoline, gas or electric flatirons are each time and labor savers. An apron made of soft, white oilcloth is a satisfactory substitute for the gingham one, especially for all heavy work.

When the bonds of custom and the fear of criticism are overcome, then, with health in the home, with no unnecessary work being done, with work so planned as to provide time for rest and recreation, housework will become a pleasure, not a burden. The needs of each family are so variable that no one can plan another's duties, but each must solve her own problems, and I believe that half the pleasure and profit will come through the actual working out of individual plans.

“Not failure, but low aim is crime.”

SYSTEM IN THE HOME

Mrs. DELLA A. JONES

Farmers' Institute Lecturer

System in the home may be defined as the orderly attention to all details that are essential for home-making.

That which has made the great railroad corporations so valuable to their patrons for transportation purposes, is the system they have developed. Their business is so managed that hundreds of people and thousands of dollars' worth of goods are carried to and fro across this country with comparatively small loss of either life or property.

Railroad companies have so systematized their business that they know within a few minutes where every train or employee can be located. Upon the superintendent devolves the operation of the system that makes these companies so useful and successful.

Home-making is a business of more importance than that of any company or corporation, since it has to do with the rearing of the family, keeping its members healthy and happy, and making the home attractive and comfortable.

System is as necessary in home-making as oil is to machinery. It helps to make things run smoothly, it makes the housewife more efficient, it helps her conserve her strength, time, energy and money.

As in all business concerns or well-organized companies, a superintendent or manager is necessary; so in home-making there must be a superintendent to obtain the best system. The housewife should act in this capacity and have general oversight of the affairs in the home.

All honor should be given to those women who successfully rear happy, contented families in healthy, comfortable homes, thus proving themselves to be not only housekeepers but home-makers.

The different sizes and locations of houses, kinds of equipment, and numbers in the family, make it necessary for each housewife to work out a system of her own. It is therefore impossible to lay down definite rules for working out a general system. Since no two persons work alike any more than they look

or act alike, only a few suggestions can be given along those lines common to all home-makers.

First: "Plan the day's work, then work the plan and be sure not to let the plan work you." A few moments spent the night before in planning the duties of the coming day will enable the housewife to accomplish the labors of that day with much less anxiety and care. By deciding upon the most important thing to be done and how to do it; by taking note of the left overs in the cupboard or refrigerator, the work can be done and menus planned so that time, labor and food may be saved. Always in planning the next day's work leave time for the unexpected things which are apt to happen and consume time.

Second: "Do things regularly and in order." Many have thought a system of work was established by washing on Monday, ironing on Tuesday, baking Wednesday, sweeping upstairs Thursday, sweeping downstairs Friday, cooking and getting the house ready on Saturday for Sunday. When these things can be done on the days mentioned it does help the housewife to distribute the more arduous labors of the week; but there are many households where it is impossible to follow out this program. Many a systematic woman has found that it is not so much the day as the way in which the work is done that counts.

Take for instance the family washing, whether done on Monday or any other day, the way in which it is done is of more importance. Do not begin feeling heavily burdened and notifying the family that there is a big day's work and every one must hustle. First, see that there is plenty of water heating; then sort the clothes, placing like things together and put to soak. Get a good breakfast and enjoy eating it. Do not sit on the edge of the chair ready to jump at the least provocation. After the breakfast is over, do up the usual chores, and then get everything ready for washing. Now is the time to call for help, if there is no motor or other power to turn the washing machine (for every well-organized house now possesses such a machine). Call in the man or grown boy to help turn the machine. A systematic housewife will so manage the work of handling the clothes that no time will be lost. As soon as the machine has been turned, the man power is put to turning the wringer; then he carries the basket to the line and while the superintendent is hanging the clothes, he empties the

tubs. The smaller pieces such as handkerchiefs (which have been previously treated), collars, small aprons with long strings are all put in a cheese-cloth bag, made for the purpose, and thus put through the machine. This avoids their getting lost in the tubs or tangled around the wringer. If like pieces are kept together while in the process of washing they will come together to be hung on the line. When clothes are hung neatly and in order they are much easier ironed.

After the washing is done the lamps are cleaned and filled and the kitchen is put in order. When about to clean the lamps many steps can be saved if, instead of cleaning one lamp at a time, all lamps are brought together and done. Place a newspaper on the table on which to set the lamps, remove the chimneys, placing them where they can be easily washed; trim the wicks, clean the burners, fill the lamps one after another, then wipe off, and replace each chimney when washed. The lamps are then ready for future use.

Third: "Never put off for tomorrow that which should be done today." Sometimes when a housewife wishes a little extra time to go somewhere or do an extra piece of work, she says: "I will give this a lick and a promise." She means by this that she is neglecting her work today and leaving part of it for another day. Often times work left over in this way takes twice as much time to do it when it is done, and besides, the housewife who neglects her work one day is apt to put it off another day and thereby form careless habits of doing work; while the one that carefully and systematically does her work is forming habits which will enable her to do better work with less expenditure of energy.

Fourth: "Do things on time." Promptness or being on time, doing things with clock-like precision, is an essential factor in system in the home. If one were going to New York or Chicago he would decide on the railroad he wished to travel, and the train he wished to take. He would then manage to be at the station on time. If the train should happen to be late he would wait for it, but if he should be late he would have to wait until the next train came. Many a housewife has had a meal spoiled because when she had it ready the members of the family were not ready to eat it and she was obliged to place it in the warming closet or oven. Sometimes there are legitimate reasons for tardiness, but

for those who are always late what would happen if, when the housewife had the meal ready, she should serve those who were on time and let the tardy ones either get their own meal or wait until the next meal was served? Perhaps they would be on time if they were obliged to wait. Irregularity in time for arising in the morning or serving meals interferes very much with the orderly methods of home-making.

Sixth: "A place for everything and everything in its place." As manager or superintendent of the home, the housewife when beginning her home-making finds convenient and suitable places for the various pieces of furniture and other household equipment; she is therefore expected to know where everything is. Often many minutes are spent hunting for things that are not put where they belong after they are used. The systematic woman will be careful to put things in their places and will also train the members of the family to do so. If she is not responsible for things being out of place she will lose no time trying to find lost things for the careless member of the family.

Seventh: "Let the head save the feet." When about to do a piece of work take time to think of the different things that will be needed to do it. Then get everything ready before the work is started. If one is going to cook a meal; after the fire is fixed, get the vegetables to be prepared. If these are kept down cellar, when going for them take a pan or basket large enough to bring everything from the cellar that will be needed for that meal. Many trips up and down stairs can be saved by placing a basket near the stairs and as things are ready put them in the basket until it is necessary to go up or down and then carry several things at once. A tray or pan can be used in carrying dishes to and from the table. Many labor-saving devices are obtainable if one only takes time to learn how to use them.

Eighth: "Avoid accident by use of labels." Some women lose much valuable time opening boxes, bottles or cans and tasting or smelling their contents, sometimes making bad mistakes, where if these receptacles had been properly labeled, much time would have been saved. Medicines should never be kept in the same cupboard with cooking materials, and should always be labeled.

Ninth: "Keep a memorandum." This may be a book, wall tablet or slate, on which the various articles of groceries or other

items needed to be purchased when going to market can be written, and either torn off or copied when ready to go to the store. An inventory of the different household goods will prove helpful in times of fire. This inventory will also be helpful in times of settling the estate.

Tenth: "Keep accounts of money received and expended." In these days when so much is said about the cost of living, the systematic housewife is able to tell just how much she has received and where she has spent it. She has learned the value of buying in large quantities and so manages her purchases that several large bills do not come in at the same time. She knows just how much it is going to cost her to run her house and she so manages that she is able to put away a little money each month. System in the use of money has taught the thoughtful housewife how to select meats, dry goods and furniture for their real value for both beauty and utility purposes. She never buys a thing just because it is cheap unless she has some immediate need for it. She has also learned to avoid the fads and fashions of the day. The bargain counter has no attraction for her. She has learned that many times this counter is only the clearing house for the merchants out of date or shop-worn goods.

Children: Children in the home afford a splendid opportunity for developing system. They can be so trained that they will help with the various duties in and out of doors. Through a wise division of work the mother trains her children to be careful, thoughtful, helpful, earnest men and women, and their part in the business of home-making makes them valuable citizens.

In working out a system for the home, time must be planned for rest. The railroads demonstrate this fact. When asked if the big locomotive that starts with the Empire State express train at Buffalo took the train to New York, the response was, "To get the greatest amount of work out of this iron horse we must let it rest, so another takes the train at Syracuse and another at Albany." If it is necessary for the locomotive to rest, it is vastly more important that the human body, one of the most intricate pieces of machinery yet known, should have rest. The housewife owes it to herself and to her family to so prepare herself for life's duties by using all the means suggested and as many more as she can obtain, that she may be better able to cope with the duties of the home.

CANNING AND PRESERVING

MRS. GEORGE C. MONROE

Farmers' Institute Lecturer

Some one has figured out that if every boy in the country would eat five apples a day for the next three months it would require all the apples which have been produced in the country this year and would insure a fair price to the grocers.

Another thing about this boy-apple combination is, that it is just as good for the boy as it is for the apple market. Five apples a day will merely keep the boy's digestive organs in good working order.

The common fruits, because of their low nutritive value, are not as a rule estimated at their real worth as food. Fruit and fruit juice supply a great variety of flavors and keep the blood in a healthy condition.

Nowhere is there a greater need of a generous supply of fruit than on the farm, where the diet is apt to be restricted in variety, because of the distance from markets.

The home canning of fruits and vegetables is a matter of more importance to those who grow such products than to those who must buy them. The cost of labor and fuel, added to the cost of the raw materials, make it wiser for many to buy the canned article.

Aside from the value as food for the family is the convenience of canned fruits and vegetables for emergency luncheons. The city woman who can send to the corner grocer need not worry but the woman in the country where the grocer is miles away needs to prepare for times of siege.

The essential points in all canning are few — absolute cleanliness, sterilization and suitable containers, which means the destruction and exclusion of ferments, molds and bacteria.

Over a hundred years ago a Frenchman first made practical application of the methods of preserving food by putting it in bottles or cans, which he hermetically sealed. He then put the full bottles or cans in water and boiled them. At that time and

even until recent years it was thought that the oxygen of the air caused the decomposition of food. Scientists have proven that it is not the oxygen which causes fermentation and putrefaction, but bacteria and other small plant growths. So, while Appert's theory of the cause of the spoiling of food was incorrect, yet the world owes him a debt of gratitude since his method of preserving it by sealing and corking was correct.

Bacteria and yeast exist in the air, in the soil and on all vegetable and animal substances. Bacteria are one-celled and so small that they can be seen only by aid of a microscope. In growing this single cell divides forming two cells. This grows on so rapidly that it has been estimated that one single bacterium may produce seventeen million similar growths in twenty-four hours. To grow it is necessary to have moisture, warmth and proper food.

Yeasts which are also one-celled grow less rapidly. A bud develops, breaks off and forms a new yeast plant.

Spoiling of food is caused by the development of bacteria or yeast. Most germs require air to grow, but there is one kind of bacteria that grows without air, and if it is sealed up in a can it spoils the contents of the can.

Bacteria grow best in foods containing nitrogen such as meat, fish, eggs, peas, beans and milk — especially in warm weather. Bacteria do not grow so fast in sweet substances while yeasts develop very rapidly in such. Some vegetable foods contain so much acid that very few bacteria or yeast attack them, as lemons, cranberries and rhubarb.

So it comes about that canned fruits are more commonly spoiled by yeast than bacteria. When fruits are preserved with large amounts of sugar they need not to be hermetically sealed to protect them from bacteria and yeasts, since the thick syrup is not favorable to their growth. However, these are best put up in small self-sealing jars because mold grows freely on moist sugary substances exposed to the air.

Every housekeeper is familiar with molds which during warm and moist weather grow upon all sorts of starchy materials, such as boiled potatoes, bread, mush, etc., as well as fresh canned and preserved fruits. Molds grow from spores which are always

floating in the air. When a spore settles on a suitable article of food it sends out a fine thread which branches out and works its way over and into the substance. At first it seems white or light gray and can hardly be seen, but soon the mold becomes colored and, under a microscope, looks like a beautiful flower garden. These spores of mold are light and are blown about by the wind, but they are heavier than air and settle everywhere. If one settles in a glass of preserves or jelly it will soon grow. Molds do not work so freely in canned fruits as raw.

Canning is from all points the most desirable way of caring for fruits, making only enough rich preserves to serve for variety and for special occasions.

There are several methods of canning fruits, as follows:

First, by simply stewing the fruit in an open kettle and then sealing in jars.

Second, by cooking in jars in the oven. Put the raw fruit in jars filled with syrup boiling hot and place jars uncovered in the oven on a sheet of asbestos paper or in a pan with a little water in it; cook about ten minutes. If fruit has settled refill and seal jars.

Tomatoes cooked in the oven are fine. First stew a few tomatoes and strain. Then fill cans with fresh peeled tomatoes, pouring in and filling to overflowing with the stewed tomatoes. Cook uncovered a half hour; refill and seal.

Third, by cooking in jars in a water bath. By this method prepare the fruit and syrup as for cooking in the oven. Fill the sterilized jars and put covers on loosely. Have a wooden rack in bottom of wash boiler and enough warm water to come about four inches above the rack. Place the filled cans on the rack, separating the cans by cloth or ropes, so they will not bump together when the water boils. Cover the boiler and cook fruit ten minutes from the time the water boils. Refill cans with syrup and seal.

In canning vegetables by this method, the process is much longer. We are not able to get a high enough degree of heat to kill the bacteria that cause decay in vegetables on our stoves, so to make up, we need to cook the vegetables in the water bath for three or even four hours. I do not like this way of canning fruits

and vegetables for several reasons. The long time necessary to have a very hot fire in one's kitchen, making the room very uncomfortable for doing other work, and the amount of fuel used, as well as the handling of the hot cans.

All things considered I prefer the fireless cooker for canning all vegetables and fruit. For fifteen years I have used a home-made cooker for this purpose.

By this method the fresh fruit is placed in cans, the cans filled to overflowing with boiling syrup and the tops screwed on. After the cans are placed in the compartment of the cooker, boiling water is poured over the cans to cover them and the cooker is fastened up.

In canning vegetables I place the cans after filling with the vegetables, water and some salt, in the steam cooker until the contents are boiling hot; I then put them in the fireless cooker. By this method the cans do not have to be opened to refill; there is no danger from handling hot cans and no extra heat used in the kitchen. It is just as necessary to sterilize every article used in the process as when the other methods are used.

In making preserves, small jelly glasses should be used. The general rule is equal weights of sugar and fruit. We might speak of one method called the "platter" method of preserving, using strawberries for example. Put sugar and berries in layers, having not more than four inches in all in the kettle. Heat slowly to boiling point, boil ten minutes from the time it begins to bubble. Pour this on a platter two or three inches deep and let stand in a sunny window in an unused room three or four days. In that time the fruit will grow plump and firm and the fruit thicken almost to a jelly. Put this preserve cold into jars or tumblers.

In the making of jelly, housekeepers feel less sure than in any other kind of preserving; since a rule that works one year may not the next. That is to say, in a season when there has been a great deal of heat and sunshine there will be more sugar in fruit than in a cold, wet season; consequently a pint of currant juice will require $\frac{3}{4}$ of a pint of sugar. But if it is a cold, wet season the pint of currant juice will require a generous pint of sugar.

Jelly sometimes crystallizes from too hard boiling. If syrup

boils rapidly the crystals are thrown in the sides of the kettle. If these crystals are stirred into the syrup they are likely to cause the whole mass to crystallize.

Jelly made by the cold process is more delicate than that made by boiling but it does not keep so well.

Jellies are so rich in sugar that bacteria and yeast do not attack them. They must be protected from molds. A thick coating of paraffin makes a good cover but is not quite so safe as the paper dipped in brandy, because the spirits destroy and remove spores that may happen to rest on the jelly. Paraffin may be poured over a brandied paper.

As part of this subject one might include the making of marmalades, fruit juices, syrups and vinegars, all cooling and refreshing aids to digestion when not taken in excess.

MODERN APPLIANCES IN THE HOME

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If there are any two occupations which ought to have the fullest understanding and sympathy for each other, those two occupations are farming and home-making. They have come through the same experience: Both have been undervalued in the past, and both are now achieving the important place which they deserve in the world's economy. Not so many years ago, if a farm boy wanted to invest time and money in education, it meant turning his back upon the farm, for the training at his command took no account of agriculture as a vocation. The work of the farm was left to that brother who was accounted the least ambitious and intelligent one of the family, on the theory that anybody could be a farmer and that, if anything, one could farm better by instinct than by training. Today it is generally recognized that no other line of work requires keener intelligence or wider knowledge than does farming, and therefore men are being educated for the farm instead of away from it. And with education has come pride in the occupation once so generally despised.

In the household the same revolution has taken place. It used to be the rule that a girl who wanted to invest time and money in education turned her back on the field of home-making. She grew farther and farther away from the round of homely duties that made up the life of the sister who remained behind. The home-minded sister, like the farm-minded brother, was accounted less gifted, less worthy of an education, than those who preferred a more showy occupation. In the household, as on the farm, it was held that instinct was a sufficient guide for so humdrum a business.

But just as we are awaking to a sense of the power wielded by a scientific farmer, so we are coming to recognize how far-reaching is the influence of a home-maker who has mastered her profession. If the Emperor of Germany thought that he was be-

littling women when he said that "women did not, or need not, know how to talk of anything except children, cooking, and church," he was mightily mistaken, for the woman who knows even a part of what there is to be known about children, cooking, and church, has incidentally laid a pretty good foundation for knowledge of every kind. Instead of appreciating this fact, women have accepted sayings like the German Emperor's as proof that home-making was an **occupation** in which one person could do about as well as another, and that the mere home-maker owed the world an apology for not being engaged in more brilliant pursuits.

A woman I once knew, who had suddenly lost her income, was fortunate enough to be a supremely good cake-maker, so that she was able, by means of this, to earn a comfortable living. But so ashamed was she of her occupation, that if anyone came to call when she had cake in the oven, she would let the cake burn and pretend that the smell came from the neighbor's, rather than admit that she was making an honorable living in an honorable way.

And how was it when the census man came around, and after asking us all the seaching questions at his command about our ancestry, fixed us with an eagle eye and made the final query: "What is your occupation?" Did we not hang our heads and say: "Well, to tell you the truth, I haven't any. I don't do anything. I am only a housekeeper?" Thanks to our changed attitude toward the profession of home-making, I venture to say that when the census man comes around again, those of us who have the right will say proudly in answer to his question: "I am engaged in the most important occupation in the world: I am a home-maker."

Two things are needed to insure the census man's getting this answer wherever he goes: Better appliances, to make work easier, and better-trained housewives to use to better advantage such appliances as they have at hand. Both these conditions will be sooner fulfilled if men give us their cooperation and help. It is to the farm homes that we may look for the solution of the household problem, for where is there a closer partnership between man and wife than on the farm? And to whom can women look with more assurance for the needed cooperation than to the farmer,

who has had to struggle against the same odds in his occupation as have women in the occupation of housekeeping? Yet, if you say to a man: "Let your daughter be trained to keep house scientifically," or "Let your wife go away for a few months' study, to get a new viewpoint of the work that has grown to seem only drudgery," is he not apt to say: "Why should my wife or my daughter be trained? I am not at all sure that a house kept by rule is a comfortable place. In such a house, if you come in late to dinner you get black looks, and if you track in a little mud you get a lecture on germs. No, I have no use for trained housekeepers." How long ago was it that many people had exactly that feeling about the hospital-trained nurse? How many times have we heard it said: "I do not want a trained nurse in my house. She cannot adapt herself to conditions. She makes more work than she saves. I have no use for her." Yet we have all learned by this time that the trained nurse who deserves such criticism is an exception. If the objections I have quoted can be truthfully made against training either the housekeeper or the nurse, it must be because a necessary ingredient has been left out of the training: It lacks the salt of common sense. This was well voiced by a woman who was a most successful poultry keeper and who was asked by a writer on poultry topics, whether she followed his methods. Smiling brightly at him, she said: "Yes, we follow your methods mixed with a little common sense." Certainly she hit the nail upon the head. Training without common sense is as powerless as common sense without training.

"But," says another man, "can you train a housekeeper; isn't she born, not made?" How does that theory work out in other professions? The fact that the occasional boy or girl is born with a genius for mathematics does not relieve common folk from laboring over the multiplication table. The fact that here and there a wonderful painting is produced, or a fine piece of music composed, without previous training, does not relieve the rest of us from the laborious straight lines and five-finger exercises with which we begin our artistic careers. Nor does great talent in any of these professions mean that the possessor of the talent will cease to study, but rather that he will be the more eager to learn all that he can about his chosen work. So

the woman who is born with a genius for home-making does not prove that women with lesser talent may not be successful through training, study and practice. Nor can she, if she is to keep up with the times, afford to be satisfied without adding to her natural gift the continued study which shall enable her to meet new conditions as they arise, instead of lamenting the passing of old ones.

One of the greatest opportunities open to housekeepers today lies in what the vast majority of them consider an unmixed calamity. I refer to the difficulty, in town and country alike, of finding help. Yet this passing of human helpers is opening the way to perfecting mechanical helps in the household. In the days when help of a sort was plentiful, it was a very natural thing to say: "Yes, I have a helper in my kitchen, and I think I can train her up to a certain point, but I am not going to get her expensive utensils, or try to teach her new and better ways of working, for she would not appreciate the value of either. It is less trouble, on the whole, to let her go along in her old drudging, unimaginative way than to try to lift her out of it." But today, when in most households the wife—her own boss in her own business—does the work, her intelligence and training should very soon enable her to acquire the mechanical turn of mind which is needed to bring successfully to her assistance the so-called "labor saving devices."

The use of machinery calls for brains and courage. You have perhaps all had the experience of advising someone to get a bread-mixer and have been pained, when you called a few days later, to find that the bread-mixer had joined the things on that upper shelf where people put hasty purchases which they wish to forget. In answer to your question as to why the bread mixer was not in use you have probably been told that it did not work just right the first time and that the owner got discouraged and went back to the old way. A machine will no more do its best work at the first trial than will a human helper. It needs to "find itself." It needs to be studied and understood; and for this study and understanding we need the mechanical turn of mind, which women in general do not possess at present to the same degree as men, simply because they have failed to cultivate it, but which an intelligent woman can soon acquire.

Two or three years ago I visited a large spice factory in New England, widely known not only for the excellence of its product, but for the care given to its employees. We watched, with deep interest, the ease with which the machines did the work, and the apparent leisure of the young women whose only business seemed to be to keep the machines up to their work by a deft touch here and there. When we thought we had seen the entire plant, our guide opened a door at one side and took us into a room with a long table running down the center. Around it were seated a dozen or two of women fifty and sixty years old, each of them with a pasteboard box in one hand and a metal scoop in the other, slowly and laboriously filling by hand counterparts of the boxes which the machines in the other room were filling so rapidly and accurately. I turned to our guide and asked him: "Who are those women and what place has this room in your up-to-date factory?" He said: "Those are women who have worked for us for twenty years, some of them longer. There is something lacking in their mental make-up which renders it impossible for them ever to learn the use of machinery, but we are not turning them away on that account. We are letting them go on in their same infinitely slow, dull way until the time comes when they themselves are ready to quit work." It was a pleasant thought that a great big money-making concern should take such individual thought for its workers, but a very startling one that every one of us, by failing to develop the faculty of utilizing the helps at our command might drudge our way through life in a way similar to those poor women.

We have centuries of tradition to overcome before we can achieve a man's scorn of poor tools. We must learn to look at our workshops with men's eyes. I venture to say that if we all had the courage to go away for a three months' vacation, leaving the men in charge of our kitchens, that while at the end of the first month things might look "like sixty," at the end of the second month they would begin to improve, and if our courage still held out and we stayed the third month, we should come home to find many things changed for the better. They might look strange and queer, but there is no doubt that in every instance we should find labor-saving devices installed which men never dreamed we

needed, until they themselves tried to work without them. It is said that the reason why women are slow in adopting modern appliances is that they are too conservative. I think a truer reason is that through our lack of mechanical training we have bought this or that piece of machinery without realizing that its care would make more work than the machine could save, and like the "burned child," we have "shunned the fire" ever since. It is so easy for a person whose business it is to sell articles of this kind to tell us nothing but the truth and yet to withhold a part of the whole truth. Until very recently the dish-washing machine was a case in point. It could truthfully be said of this or that make, that it was easy to clean, practical, simple, and that a child could run it, and to suppress the fact that while it might pay for a family of one hundred, it would not be a good investment for the average household.

The mechanical turn of mind, then, is the first requisite toward solving the problem. In every community there are women who have it and who could supplement the work of the Good House-keeping Institute and like organizations in trying out new household devices as they are manufactured, not once or twice, but the half-dozen or even score of times which might be necessary to save the rest of us from buying in haste and repenting at leisure, on the one hand; or from denying ourselves an indispensable help, on the other hand.

The objection of expense arises too often like a dragon when we think of this or that labor-saving device which might entirely change our lives. We are hindered by the thought that unless we individually can own a thing we must therefore deny ourselves the use of it. Compare our attitude in this regard with the man's. How many men would think that just because they cannot afford personally to own and give house-room to a threshing machine, that they must therefore go back to the days of hand-threshing? And yet how many communities are there where the women jointly own or contract for the services of a great big vacuum cleaner, which shall drive up to the house at stated intervals, poke its competent nozzle within, and free our houses so completely of dust that we need not fear the eyes of critical neighbors for months to come? So much of the dust in our households in com-

posed of that which hid under beds and bureaus when we thought we had captured it in "that painful process of house-cleaning associated by men with loose tacks, strong language and colds in the head." We think we have destroyed every particle of dust, only to discover a week later that the rooms are again dusty. But supposing that the vacuum cleaner which would do away with this is at present entirely beyond our means, do we therefore need to settle back and say that we are forever doomed to the corn broom and dust-pan? Can we not get much needed help from some of the smaller vacuum cleaners, or a vacuum sweeper or, failing even that, from a long-handled dust-pan, which would make it unnecessary to stoop over? Again, is the threshing machine any easier to acquire than some of the pieces of laundry machinery which would make "blue Monday" only half blue? And is not a neighborhood laundry, where such machinery could be used by different families in the neighborhood, in turn, something which could be carried out if we were all determined on it?

But while waiting for the big helps, let us not scorn the lesser ones in laundry work as in cleaning. The washing machine has made its way more successfully than most of our labor-saving devices, but how often do we see the mangle, either heated or unheated, or the alcohol, or gasoline flat iron where the electric iron is impossible? How many people make an improvised mangle out of their clothes wringer?

With the necessary mechanical turn of mind we can take our equipment just as it stands and make it more useful than it ever has been. The woman who discovered that a wire hairpin would make just as good a cherry stoner as any you can buy for ten or twenty-five cents, had the necessary imagination to make the most of any utensil at her command. Such a woman would not hesitate, either, to press into service whatever would be of use, whether it was originally intended for the kitchen or not. For instance, she might go to the owner of a boat and ask him how he managed to get his decks so white and clean, adding: "I can't get my kitchen floor to look like that unless I get down on my hands and knees. Do you get down on your hands and knees to scrub your decks?" And he says "No," very emphatically, and shows her a deck brush — a scrubbing brush with a long handle, which

solves her problem just as well as if it had been designed purposely for the kitchen floor. This woman, after many vain efforts to get, for the greasing of her pans, a brush which should be positively warranted not to shed its bristles and to withstand the hot water necessary to cleanse it, spies on her son's bureau one day, just what she has been looking for—a brush of badger hair, bound with twine, warranted to withstand hot water. The fact that it is his first and cherished shaving brush keeps her from annexing it, but she goes straightway and buys one just like it in preference to any so-called "pastry brush." One day, after vainly struggling to free the lemon grater from the grated rind, she picks up a little fibre brush and discovers that one light stroke does what fifteen minutes' labor with a knife did not accomplish. She learns of the artist how useful is the palette knife—more effective for the cleansing of bowls than anything except the human finger, which has been discarded for the purpose since we began to study sanitation. She finds the roll of brown paper just as useful in the kitchen as it is in the shop, and has allowed it largely to replace the rolling board, which required such careful cleansing. At the druggist's one day she discovered what is known as an emulsifier—a deep porcelain bowl with a beater like a Dover egg beater fastened to it somewhat aslant, which may be turned by hand or by a motor. While never intended for the kitchen, this utensil serves her better for the beating of cakes and frostings and the mixings of salad dressings than anything manufactured for the purpose.

Those whose business it is to sell kitchen appliances, naturally find it to their advantage if we buy a great variety of utensils, each designed for some special use. That same mechanical turn of mind which I have mentioned so often will save us much money right here by making us realize to how many uses an appliance may be put besides the one for which it was specially designed. When you have decided that the bread mixer saves your time and is practical, and have therefore added a cake mixer to your equipment, do not imagine that the mixing of cake is all that it can do. It makes salad dressing, beats eggs, makes butter and kneads bread with equal readiness and quite as effectively as if each one was its specialty. A scrap basket has long been advo-

cated as a useful and necessary piece of kitchen furniture, but until you have tried setting aside a new scrap basket for the purpose of crisping your lettuce, you will not have realized its full usefulness. It makes us so far independent of a refrigerator, for after the lettuce is sprinkled with fresh cool water in the basket and set in the cellar, the basket reeds hold just enough moisture to put the lettuce into excellent condition. A fireless cooker is no less useful for canning fruits than for cooking cereals or raising bread. The list of means for making our work easier might be multiplied indefinitely if we are only on the lookout for them.

The question arises, what is the possession of labor-saving devices and our knowledge of their use going to do for us? One man has said: "If the time gained by labor-saving devices is to be spent by women in still multiplying the same round of duties, in spending more hours doing more of the same kind of work, then the labor-saving devices had better be at the bottom of the sea." Their real object is to enable the housewife, by shortening her working day, to give her family and community, not the dregs of an over-weary body and brain, but the hopeful, inspiring influence on which the uplift of every home and community depends. Relief from a part of the manual drudgery of house-keeping sets her free to taste the joys of her profession, home-making.

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STATE OF NEW YORK
DEPARTMENT OF AGRICULTURE

CALVIN J. HUSON, *Commissioner*

Bulletin 51

AGRICULTURAL LAW

1913

Containing extracts from the County Law, Town Law, Labor Law and
General Business Law, and other enactments of the Legislature
which bear some relation to agriculture.

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AGRICULTURAL LAW

Laws 1909, Chapter 9

AN ACT in relation to agriculture, constituting chapter one of the consolidated laws.

Became a law, February 17, 1909, with the approval of the Governor. Passed, three-fifths being present.

Article 1. Short title (§ 1).

2. General provisions (§§ 2-13).
3. Dairy products (§§ 30-54).
4. Adulterated vinegar (§§ 70-73).
5. Diseases of domestic animals (§§ 90-108).
6. Prevention of fraud in sale of paris green and other substances (§§ 140-144).
7. Sale and analysis of concentrated commercial feeding stuffs (§§ 160-165).
8. Sale, adulteration or misbranding of food and food products (§§ 200, 201).
9. Sale and analysis of commercial fertilizers (§§ 220-224).
10. Turpentine, linseed or flaxseed oil (§§ 240-243).
11. Apples; pears; peaches; quinces (§§ 260-263).
12. Agricultural statistics (§§ 280, 281).
- 12-a. Sale of farm produce on commission (§§ 282-289).
13. State fair (§§ 290-294).
14. Miscellaneous provisions (§§ 300-318).
15. Inspection and sale of seeds (§§ 340, 341).
16. Laws repealed; when to take effect (§§ 360, 361).

ARTICLE 1

Short Title

Section 1. Short title.

§ 1. **Short title.** This chapter shall be known as the "Agricultural Law."

ARTICLE 2

General Provisions

Section 2. Commissioner of agriculture.

3. Power of commissioner, his assistants and employees.
4. Expert butter and cheese makers.
5. Annual report.
6. Certificate of chemist presumptive evidence.
7. Evidence; principal's liability for acts of agent.
8. Prosecution for penalties.
9. Disposal of fines and moneys recovered.
10. When injunction may be obtained.
11. When prosecution shall not be compelled to elect.
12. Examination of food for state institutions.
- 12a. Almshouse farms.
13. Regulation of manufacture and sale of commodities.

§ 2. **Commissioner of agriculture.** There shall be a department of the state government known as the department of agriculture, which shall be charged with the execution of the laws relating to agriculture and agricultural products. The commissioner of agriculture shall be the chief of the department. The commissioner of agriculture shall be appointed by the governor, by and with the advice and consent of the senate. His term of office shall be three years. He shall be paid an annual salary of not to exceed six thousand dollars and his necessary expenses incurred in the discharge of his official duties. He may appoint four deputy commissioners of agriculture, a director of farmers' institutes and appoint or employ such clerks, chemists, agents, counsel and other employees as he may deem necessary for the proper enforcement of such laws and the proper administration of the department, who shall receive such compensation as may be fixed by him, in cases where it is not otherwise fixed, and their necessary expenses. The compensation of his deputies, clerks, and other persons appointed or employed by him and such necessary expenses shall be paid on his certificate by the treasurer on the warrant of the comptroller. All other charges, accounts and expenses of the department authorized by law shall be paid by the treasurer on the warrant of the comptroller, after they have been audited and allowed by the

Department
of agricul-
ture.
Commis-
sioner.
Appoint-
ment.
Term of
office.
Salary
and ex-
penses.
Deputies,
etc.

Payment
of salaries.

State de-
partment
charges.

comptroller. The trustees of public buildings shall furnish suitable rooms for the use of the department. (*As amended by chapter 345 of the Laws of 1913.*)

§ 3. **Power of commissioner, his deputies and employees.** The commissioner of agriculture, his deputies, clerks, experts, chemists, agents and counsel employed by him, shall have full access to all places of business, factories, farms, buildings, carriages, cars and vessels used in the manufacture, sale or transportation within the state of any dairy products or any imitation thereof, or of any article or product with respect to which any authority is conferred by this chapter on such commissioner. They may examine and open any package, can or vessel containing or believed to contain any article or product, which may be manufactured, sold or exposed for sale in violation of the provisions of this chapter, and may inspect the contents therein, and take therefrom samples for analysis. The commissioner of agriculture shall have the power by subpoena or subpoena duces tecum, issued and attested by him in his official capacity to require the attendance and testimony before him, or any of his deputy commissioners or other persons designated by him for that purpose, of any person whom he may have reason to believe has knowledge of any alleged violation of this chapter, and the production, before him or any of his deputy commissioners of agriculture of any records, books, papers and documents for the purpose of investigating any alleged violation of this chapter. Such subpoena or subpoena duces tecum may be served by any person over the age of twenty-one years. No person shall be excused from attending and testifying or producing any records, books, papers or other documents before said commissioner of agriculture or any of his deputy commissioners of agriculture or other person designated by him for that purpose upon such investigation upon the ground or for the reason that the testimony or evidence, documentary or otherwise, required of him may tend to convict him of a crime or subject him to a penalty or forfeiture, but no person shall be prosecuted or subjected to any penalty or forfeiture for or on account of any transaction, matter or thing concerning which he may so testify or produce evidence, documentary or otherwise, and no testimony so given or produced

Full access
for in-
spection.

Opening
cans and
vessels.

Power
to sub-
poena.

Service.

Excuse.

Testimony.

Use of
testimony
against
witness.

shall be received against him upon any criminal action, investigation or proceeding. Any person who shall omit, neglect or refuse to attend and testify or to produce any records, books, papers or documents, if in his power so to do, in obedience to such subpoena or subpoena duces tecum shall be guilty of a misdemeanor. Any person who shall wilfully and knowingly make any false statement under oath before the commissioner of agriculture, a deputy commissioner of agriculture or other person designated, as provided herein, concerning a material matter, shall be guilty of perjury. The commissioner of agriculture and his deputy commissioners of agriculture and other persons designated, as provided herein, are hereby authorized and empowered to administer oaths and affirmations in the usual appropriate forms to any person in any matter or proceedings authorized as aforesaid and in all matters pertaining or relating to this chapter and to take and administer oaths and affirmations in the usual appropriate forms, in taking any affidavit or deposition, which may be necessary or required by law or by any order, rule or regulation of the commissioner of agriculture for or in connection with the official purposes, affairs, powers, duties or proceedings of said commissioner of agriculture or his deputy commissioners of agriculture or for any official purpose lawfully authorized by said commissioner of agriculture. (*As amended by chapter 345 of the Laws of 1913.*)

§ 4. **Expert butter and cheese makers.** The commissioner of agriculture may appoint and employ expert butter and cheese makers, who shall, under his direction, examine and inspect butter and cheese factories and attend at agricultural fairs, societies and meetings designated by the commissioner, to impart thereat information as to the best and most improved method of making butter and cheese and improving the quality thereof. (*As amended by chapter 112 of the Laws of 1910.*)

§ 5. **Annual report.** The commissioner of agriculture shall make an annual report to the legislature on or before January fifteenth, of his work and proceedings for the year ending September thirtieth, next preceding, which shall include a statement

in detail of the number of assistant commissioners, chemists, experts, agents, and counsel employed under the provisions of this chapter during such year, and their compensation, expenses and disbursements; and also a statement in detail of the expenditures of moneys appropriated for the state agricultural society, the county agricultural societies and the New York agricultural experiment station; and other agricultural purposes and estimates of the amounts required for all such purposes for the ensuing year. He may require the state agricultural society and the county agricultural societies to make reports to him and prescribed* the form of such reports.

Society
reports.

§ 6. **Certificate of chemist presumptive evidence.** Every certificate, duly signed and acknowledged, of a chemist, analyst or other expert employed by the commissioner of agriculture or any analysis, examination or investigation made by such analyst, chemist or expert with respect to any matter or product which the commissioner has authority to examine or cause to be examined, shall be presumptive evidence of the facts therein stated.

People v. Eddy, 12 N. Y. Supp. 628; People v. Kibler, 106 N. Y. 321; People v. Mahaney, 41 Hun, 26; People v. Schaeffer, Id. 23; People v. Thompson, 14 N. Y. Supp. 819; People v. West, 106 N. Y. 293.

§ 7. **Evidence; principal's liability for acts of agent.** The doing of anything prohibited by this chapter shall be evidence of the violation of the provisions of this chapter relating to the thing so prohibited, and the omission to do anything directed to be done shall be evidence of a violation of the provisions of the chapter relative to the thing so directed to be done. The intent of any person doing or omitting to do any such act is immaterial in any prosecution for a violation of the provisions of this chapter. Any person who suffers, permits or allows any violation of the provisions of this chapter by his agent or servant or in any room or building occupied or controlled by him, shall be deemed a principal in such violation and liable accordingly. Any person who shall keep, store or display any article or product, the manufacture or sale of which is prohibited or regulated by this chap-

Evidence of
violation.

Intent im-
material.

Display
deemed as
sale.

* So in the original.

ter, with other merchandise or stock in his place of business, shall be deemed to have the same in his possession for sale.

People v. Bosch, 129 App. Div. 660; People v. Hills, 64 Id. 584; People v. Terwilliger, 59 Misc. Rep. 617.

Cause for prosecution.

§ 8. **Prosecution for penalties.** Whenever the commissioner of agriculture shall know or have reason to believe that any penalty has been incurred by any person for a violation of any of the provisions of this chapter, or that any sum has been forfeited by reason of any such violation, he may cause an action or proceeding to be brought in the name of the people for the recovery of the same. Such action may be brought in the county where the product is sold, offered or exposed for sale, or in the county where the adulteration or violation, or any part thereof, occurred.

Place of action.

People v. Belknap, 58 Hun. 241; People v. Briggs & McQuade, 114 N. Y. 56; People v. Buell, 85 App. Div. 141; People v. Cipperly, 37 Hun. 324. (dissenting opinion) 101 N. Y. 634; People v. Hodnett, 81 Hun. 137; People v. Lamb, 85 Id. 171; People v. Liberman Dairy Co., 59 Misc. Rep. 22, 195 N. Y. 609; People v. Munn, 131 App. Div. 341; People v. Salisbury, 2 Id. 39; s. c., 151 N. Y. 663.

Moneys recovered.

§ 9. **Disposal of fines and moneys recovered.** One-half of all moneys recovered, either as penalties, forfeitures or otherwise, for the violation of any of the provisions of this chapter, and from fines imposed as a punishment for any criminal offense committed in violation of the provisions of this chapter, or of the penal law relating to the punishment of criminal offenses committed in violation of the provisions of law for the prevention of frauds in the manufacture or sale of any of the articles or products to which this chapter relates, shall be paid by the court or the clerk thereof to the city or county where the recovery shall be had or fine collected, for the benefit of the poor of such city or county, except in the city of New York, where the same shall be paid to the proper authorities, and equally divided by them between the pension funds of the police and fire departments.

Disposal.

In New York City.

Disposal of residue.

The residue of such moneys shall be paid into the treasury of the state, and paid out by the treasurer, upon the warrant of the comptroller, for the purpose of defraying the expenses of the department of agriculture, audited by the comptroller. The same disposal shall be made of all moneys recovered upon any bond given by any officer by virtue of the provisions of this chapter.

§ 10. **When injunction may be obtained.** In an action in the supreme court for the recovery of a penalty or forfeiture incurred for the violation of any of the provisions of this chapter an application may be made on the part of the people to the court or any justice thereof for an injunction to restrain the defendant, his agents and employees from the further violation of such provisions. The court or justice to whom such application may be made, shall grant such injunction on proof, by affidavit, that the defendant has been guilty of the violations alleged in the complaint, or of a violation of any such provision subsequent to the commencement of the action, and in the same manner as injunctions are usually granted under the rules and practice of the court. No security on the part of the plaintiff shall be required, and costs of the application may be granted or refused in the discretion of the court or justice. If the plaintiff shall recover judgment in the action for any penalty or forfeiture demanded in the complaint, the judgment shall contain a permanent injunction, restraining the defendant, his agents and employees, from any further violation of such provision of this chapter. Any injunction, order or judgment obtained under this section may be served on the defendant by posting the same upon the outer door of the defendant's usual place of business, or where such violation was or may be committed, or in the manner required by the code of civil procedure, and the rules and practice of the court. Personal service of the injunction shall not be necessary when such service can not be secured with reasonable diligence, but the service herein provided shall be deemed sufficient in any proceeding for the violation of such injunction.

Applica-
tion for in-
junction.

Granting
injunction.

Security.

Costs.

Permanent
injunction.

Hopkins v. Clemson College, 221 U. S. 636; People v. Bouchard, 6 Misc. Rep. 459; People v. Schintzius, 61 Id. 410; People v. Windholz, 68 App. Div. 552.

§ 11. **When prosecution shall not be compelled to elect.** In an action for a penalty or forfeiture incurred by reason of the violation of the provisions of this chapter, when the complaint charges a violation of any two or all of such provisions, the plaintiff shall not be compelled to elect between the counts under such different provisions but shall be entitled to recover if it is found that a

Plaintiff
entitled to
recover.

violation of any one of such provisions has been committed for which a penalty or forfeiture is imposed.

People v. Briggs & McQuade, 114 N. Y. 56; People v. Liberman Dairy Co., 59 Misc. Rep. 22; People v. Munn, 131 App. Div. 341.

§ 12. The commissioner of agriculture is hereby empowered and authorized to examine or cause to be examined food or food products produced or secured for use in the state institutions — milk monthly; other foods semi-annually — and to make or cause to be made such other examinations as he may deem wise or as the facts seem to necessitate and warrant relative to such food products and relative to the agricultural methods at such institutions, and report the results of such examinations and make recommendations thereupon to the fiscal supervisor or to the superintendent of prisons or to the commission in lunacy for their respective departments or offices. For the purpose of assisting the commissioner of agriculture in the performance of duties authorized by this section, the fiscal supervisor and the superintendent of prisons and the state commission in lunacy shall secure and transmit to the commissioner of agriculture such available appropriate information and render such other assistance as the commissioner of agriculture may call for. (*As added by chapter 434 of the Laws of 1910.*)

§ 12-a. **Almshouse farms.** The commissioner of agriculture is hereby empowered and authorized to make or cause to be made investigation and examination as to the farm lands at the almshouse farms of the various counties, the purposes to which they are best adapted and the crops which can most profitably be raised thereon, and to make report on the same to the boards of supervisors of the said counties; and to give lectures and demonstrations at least once each year at said almshouse upon the agricultural methods best adaptable to the various communities, sufficient notice of such lectures and demonstrations being given throughout all parts of the county. The commissioner of agriculture may assign members of the staff of the New York experiment station at Geneva, members of the faculties of the New York college of agriculture and of the various state schools of

Examina-
tion of
food for
state in-
stitutions.

Report of
examina-
tion.

Assistance
to commis-
sioner.

Investiga-
tion of
farm
lands.

Instruc-
tors and
lectures

agriculture, subject to the approval of the directors thereof, to carry out the provisions of this section under his direction. (*As added by chapter 460 of the Laws of 1913.*)

§ 13. Any corporation, company, association or person doing business within the state of New York in any commodity or product the manufacture or sale of which is either regulated or forbidden by the agricultural law may apply to the commissioner of agriculture to be registered in the department of agriculture. Such application shall be made annually and shall be for the current fiscal year. In making such application he shall submit the following information: his full name, postoffice address, place of business and nature of the business he is conducting, and the name or names of any special commodities he is handling, the sale of which is regulated by the provisions of the agricultural law. The commissioner of agriculture shall, upon receipt of such application, if it be accompanied with a registry fee of one dollar, register the name of such applicant, together with the information furnished as above set forth, and shall thereafter send to such applicant from time to time, as promptly as conditions will permit, a copy of decisions made by the department bearing upon the construction of the statute relating to the business conducted or commodity handled by the applicant, and copies of any rules or regulations issued by the commissioner relative thereto. All moneys received under the provisions of this act during the current month shall be transmitted by the commissioner of agriculture to the state treasurer on or before the fifth day of the succeeding month. (*As added by chapter 313 of the Laws of 1911.*)

Regulation
of manu-
facture and
sale of
commodit-
ies.

Application.

Registra-
tion.

Disposal of
moneys.

ARTICLE 3**Dairy Products**

Section 30. Definitions.

31. Care and feed of cows, and care and keeping of the produce from such cows.
32. Prohibiting the sale of adulterated milk, imitation cream and regulating the sale of certified milk.
33. Regulations in regard to butter and cheese factories.
34. Penalty for delivery of adulterated milk.
35. Inspection; how conducted.
36. Branded cans, jars or bottles not to be sold, re-marked or used without consent of owner.
37. Regulations in regard to condensed milk.
38. Manufacture and sale of imitation butter prohibited.
39. Manufacture or mixing of animal fats with milk, cream or butter prohibited.
40. Prohibited articles not to be furnished for use.
41. Coloring matter, dairy terms, size of package, labeling, penalties.
42. Coloring matter in food products; analysis by state board of health.
43. Manufacture and sale of imitation cheese prohibited.
44. When prohibitions do not apply to skim-milk or skim-cheese.
45. Unclean receptacles and places for keeping milk; notice to violators of provisions.
46. Unsanitary cans and receptacles condemned.
47. Receptacles to be cleaned before returning; receptacles may be seized; evidence; violation; milk can inspectors.
48. Manufacturer's brand of cheese.
49. Use of false brand prohibited.
50. County trade marks.
51. Object and intent of this article.
52. Penalties.
53. Butterine and similar products not to be purchased by certain institutions.
54. Purchase, sale and use of butterine and similar products prohibited in certain institutions.

Section 55. Licensing of milk gathering stations where milk is bought.

56. Power of Commissioner to investigate.

57. Granting and revoking licenses.

58. Certiorari to review.

59. Records to be kept.

60. Right of review.

61. Offenses.

*62.

*63.

*64.

§ 30. **Definitions.** The term "butter" when used in this article means the product of the dairy, usually known by that term, which is manufactured exclusively from pure, unadulterated milk or cream or both with or without salt or coloring matter; and the term "cheese," when used in this article, means the product of the dairy usually known by that term, which is manufactured exclusively from pure, unadulterated milk or cream, or both, and with or without coloring matter, salt, rennet, sage, olives, pimentos, walnuts, peanuts, tomatoes, celery salt or onions added thereto as a flavor. And provided further, that when manufactured by adding to the elemental product of the dairy, usually known by the term "cheese," and manufactured exclusively from pure unadulterated milk or cream or both, any pimentos, olives, walnuts, peanuts, celery salt, tomatoes, or onions, that the percentage of all such substances so added shall not exceed twenty-five per centum in bulk of the manufactured product.

The terms "oleomargarine," "butterine," "imitation of butter," or "imitation cheese" shall be construed to mean any article or substance in the semblance of butter or cheese not the usual product of the dairy and not made exclusively of pure or unadulterated milk or cream, or any such article or substance into which any oil, lard or fat not produced from milk or cream enters as a component part, or into which melted butter or butter in any condition or state, or any oil thereof has been introduced to take the place of cream. The term "adulterated milk" when so used means:

* These sections did not become law.

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| Water or fluids. | 1. Milk containing more than eighty-eight and one-half per centum of water or fluids. |
| Milk solids. | 2. Milk containing less than eleven and one-half per centum of milk solids. |
| Fats. | 3. Milk containing less than three per centum of fats. |
| Time taken. | 4. Milk drawn from cows within fifteen days before and five days after parturition. |
| Feed of cows. | 5. Milk drawn from animals fed on distillery waste or any substance in a state of fermentation or putrefaction or on any unhealthy food. |
| Insanitary surroundings. | 6. Milk drawn from cows kept in a crowded or unhealthy condition; or milk produced or kept in insanitary surroundings or in any environment or under any condition whatever that is inimical to its healthfulness or wholesomeness. |
| Removal of cream. | 7. Milk from which any part of the cream has been removed. |
| Dilution. | 8. Milk which has been diluted with water or any other fluid, or to which has been added or into which has been introduced any foreign substance whatever. |

Pure or unadulterated milk and cream.

All adulterated milk shall be deemed unclean, unhealthy, impure and unwholesome. The terms "pure milk" or "unadulterated milk" when used singly or together, mean sweet milk not adulterated, and the terms "pure cream" or "unadulterated cream" when used singly or together, mean cream taken from pure and unadulterated milk. The term "adulterated cream" when used shall mean cream containing less than eighteen per centum of milk fat or cream to which any substance whatsoever has been added. (*As amended by chapter 455 of the Laws of 1913.*)

Adulterated cream.

People v. Bosch, 129 App. Div. 660; People v. Bowen, 182 N. Y. 1; People v. Cipperly, 101 Id. 634; S. C. (dissenting opinion), 37 Hun. 324; People v. Eddy, 12 N. Y. Supp. 628; People v. Kibler, 106 N. Y. 321; People v. Koster, 50 Misc. Rep. 46; People v. Anton Koster, 121 App. Div. 852; People v. Liberman Dairy Co., 195 N. Y. 609; People v. Schaeffer, 41 Hun. 23; People v. West, 106 N. Y. 293; People v. McDermott Dairy Co., 132 N. Y. Supp. 329; Bellows v. Raynor, 207 N. Y. 389.

Care.

§ 31. Care and feed of cows, and care and keeping of the produce from such cows. No person shall keep cows, for the production of milk for market or for sale or exchange, or for manufacturing the milk or cream from the same into any article of food, in a crowded or unhealthy condition or in unhealthful or unsanitary

surroundings and no person shall keep such cows or the product therefrom in such condition or surroundings or in such places as shall cause or tend to cause the produce from such cows to be in an unclean, unhealthful or diseased condition, if the produce from such cows is to be sold, offered or exposed for sale upon the markets for consumption or to be manufactured into any food product, nor shall such cows or the produce therefrom be handled or cared for by any person suffering with or affected by an infectious or contagious disease, nor shall any such cows be fed on any Feed. substance that is in a state of putrefaction or fermentation, or upon any food that is unhealthful or that produces or may produce impure, unhealthful, diseased or unwholesome milk. But this section shall not be construed to prohibit the feeding of Ensilage. ensilage. The commissioner of agriculture is hereby empowered to give such instruction and impart such information as in his judgment may be deemed best to produce a full observance of the provisions of this section. *(As amended by chapter 216 of the Laws of 1910.)* Instruction

§ 32. **Prohibiting the sale of adulterated milk, imitation cream and regulating the sale of certified milk.** No person shall sell or exchange or offer or expose for sale or exchange, any Impure product. unclean, impure, unhealthy, adulterated or unwholesome milk or any cream from the same, or any unclean, impure, unhealthy, adulterated, colored, or unwholesome cream, or sell or exchange, or offer or expose for sale or exchange, any Imitation product. substance in imitation or semblance of cream, which is not cream, nor shall he sell or exchange, or offer or expose for sale or exchange any such substance as and for cream, or sell or exchange, or offer or expose for sale or exchange any article of food made from such milk or cream or manufacture from any such milk or cream any article of food. No person shall sell or exchange, or offer or expose for sale or exchange, as and for Certified milk. certified milk, any milk which does not conform to the regulations prescribed by and bear the certification of a milk commission appointed by a county medical society organized under and chartered by the medical society of the state of New York and which has not been pronounced by such authority to be free from antiseptics, added preservatives, and pathogenic bacteria, or bac-

Delivery deemed an offer for sale.

Constituents stated.

teria in excessive numbers. All milk sold as certified milk shall be conspicuously marked with the name of the commission certifying it. Any person delivering milk to any butter or cheese factory, condensary, milk gathering station or railway station to be shipped to any city, town or village shall be deemed to expose or offer the same for sale whether the said milk is delivered or consigned to himself or another. Each and every can thus delivered, shipped or consigned, if it be not pure milk, must bear a label or card upon which shall be stated the constituents or ingredients of the contents of the can.

People v. Abramson and Fichhandler, 137 App. Div. 549; People v. Beaman, 102 Id. 151; People v. Briggs, 121 Id. 927, 193 N. Y. 457; People v. Ciperly, 101 Id. 634; s. c. (dissenting opinion), 37 Hun. 324; People v. Eddy, 12 N. Y. Supp. 628; People v. Kibler, 106 N. Y. 321; People v. Liberman Dairy Co., 128 App. Div. 904, 931; People v. Schaeffer, 41 Hun. 23; People v. Tsitsera, 138 App. Div. 446, 122 N. Y. Supp. 915; People v. West, 106 N. Y. 293.

Kind of milk prohibited.

Any part of milk kept back.

Sour milk.

Use of dairy products by factory-man.

Record of daily business.

§ 33. Regulations in regard to butter and cheese factories. No person shall sell, supply or bring to be manufactured to any butter or cheese factory any milk diluted with water, or any unclean, impure, unhealthy, adulterated or unwholesome milk, or milk from which any of the cream has been taken, except pure skim milk to skim-cheese factories. No person shall sell, supply or bring to be manufactured to any butter or cheese factory any milk from which there has been kept back any part of the milk commonly known as strippings, or any milk that is sour, except pure skim milk to skim-cheese factories. The owner or proprietor or the person having charge of any butter or cheese factory, not buying all the milk used by him, shall not use for his own benefit, or allow any of his employees or any other person to use for his own benefit, any milk, cream, butter or cheese or any other product thereof, brought to such factory, without the consent of the owners of such milk or the products thereof. Every butter or cheese manufacturer not buying all the milk he uses, shall keep a correct account of all the milk daily received, of the number of packages of butter and cheese made each day, and the number of packages and aggregate weight of cheese and butter disposed of each day; which account shall be open to inspection to any person who delivers milk to such factory. Whenever manufacturers of butter or cheese purchase milk upon the basis of the

amount of fat contained therein and use for ascertaining the amount of such fat what is known as the Babcock test, or whenever the proceeds of co-operative creameries and cheese factories are allotted on the basis of determinations of milk fat by the Babcock test, the bottles and pipettes used in such test shall before use be examined by the director of the New York agricultural experiment station. If such bottles are found to be properly constructed and graded so as to accurately show the amount of fat contained in milk, each of them shall be legibly and indelibly marked "S. B." No bottle shall be so marked except as herein provided or used in any such test by such manufacturers, unless so examined and marked. The acid used in making such test by such manufacturers shall be examined from time to time by competent chemists employed by the commissioner of agriculture and if found not to be of sufficient strength the use of such acid shall be prohibited. No person or persons receiving or purchasing milk or cream upon the basis of the amount of fat contained therein, shall credit any patron or patrons delivering milk or cream thereto with a greater or lesser percentage or average percentage of fat than is actually contained in the milk or cream so delivered. The commissioner of agriculture or persons employed by him for that purpose may at any time assist in making tests of milk received at a butter or cheese factory for the purpose of determining the efficiency of tests usually made at such factory. All persons using other than standard bottles or acid which is not of the required strength to accurately determine the amount of fats in milk or crediting any patron or patrons delivering milk or cream with a greater or lesser percentage or average percentage of fat than is actually contained in the milk or cream so delivered, shall be subject to the penalties prescribed by section fifty-two of this article, and shall be guilty of a misdemeanor.

Babcock
test glass-
ware.

Examina-
tion of
acid.

Crediting
fat per-
centage.

Agents may
assist in
factory
test.

Misde-
meanor.

§ 34. **Penalty for delivery of adulterated milk.** Any person, firm, association or corporation delivering any milk to any butter or cheese factory in violation of any of the provisions of this chapter shall forfeit and pay to the patrons, firm, association or corporation owning the milk delivered to such factory the sum of fifty dollars, to be recovered in a civil action by the person, firm, association or corporation entitled thereto.

§ 35. **Inspection; how conducted.** When the commissioner of agriculture, an assistant commissioner, or any person or officer authorized by the commissioner, or by this chapter, to examine or inspect any product manufactured or offered for sale shall in discharge of his duties take samples of such product, he shall before taking a sample, request the person delivering the milk or who has charge of it at the time of inspection, to thoroughly stir or mix the said milk before the sample is taken. If the person so in charge refuses to stir or mix the milk as requested, then the person so requesting shall himself so stir and mix the milk before taking the sample, and the defendant shall thereafter be precluded from introducing evidence to show that the milk so taken was not a fair sample of the milk delivered, sold, offered or exposed for sale by him. The person taking the sample of milk for analysis shall take duplicate samples thereof in the presence of at least one witness, and he shall in the presence of such witness seal both of such samples, and shall tender, and, if accepted, deliver at the time of taking one sample to the manufacturer or vender of such product, or to the person having custody of the same, with a statement in writing of the cause of the taking of the sample. In taking samples of milk for analysis at a creamery, factory, platform or other place where the same is delivered by the producer for manufacture, sale or shipment, or from a milk vender who produces the milk which he sells, with a view of prosecuting the producer of such milk for delivering, selling or offering for sale adulterated milk, the said commissioner of agriculture or assistant or his agent or agents shall within ten days thereafter, with the consent of the said producer, take a sample in a like manner of the mixed milk of the herd of cows from which the milk first sampled was drawn and shall deliver the duplicate sample to the said producer and shall cause the sample taken by himself or his agent to be analyzed. If the sample of milk last taken by the commissioner of agriculture or his agent or agents shall upon analysis prove to contain no higher percentage of milk solids, or no higher percentage of fat than the sample taken at the creamery, factory, platform or other place, then no action shall lie against the said producer for violation of subdivisions one, two, three, seven and eight of section thirty of this chapter. In taking a

Stirring
the milk.

Duplicate
sample.

Herd
sample.

Bar to
action.

second sample as above set forth from the mixed milk of the herd, ^{Fair sample.} it shall be the duty of the commissioner of agriculture to have an assistant, agent or agents present during the entire time in which the said cattle are being milked to observe closely so as to be sure that the milk thus to be sampled is not adulterated and to see that it is thoroughly mixed so that the sample taken shall be a fair sample of the average quality of the mixed milk of the entire dairy or herd of cows of said producer. If, however, the said producer refuses to allow such examination of the milk produced by his dairy, then he shall be precluded from offering any evidence what- ^{Refusal of sample.} ever tending to show that the milk delivered by him at the said creamery, factory, platform or other place was just as it came from the cow. If the said producer does permit such examination, the commissioner of agriculture shall, upon receiving application therefor, send to said producer a copy of the analysis of ^{Copy of analysis on applica- tion.} each of the samples of milk so taken and analyzed as above provided. If a sample of milk shall have been taken by the commissioner of agriculture or by his orders or directions from any dairy within this state and an analysis thereof has been made by the commissioner or by his authority, any person who is or was buying milk from the said dairy at or subsequent to the time of such taking, may apply to the commissioner of agriculture for a copy of the analysis of the said sample of milk so taken and the commissioner shall thereafter furnish the said applicant with such copy. (*As amended by chapter 608 of the Laws of 1911.*)

People v. Butler, 140 App. Div. 705; People v. Hodnett, 81 N. Y. 137; People v. St. John, 89 App. Div. 617, 178 N. Y. 617, 201 U. S. Sup. Ct. 633; People v. Salisbury, 2 App. Div. 39; s. c., 151 N. Y. 663; People v. Weaver, 116 App. Div. 594; People v. Wiard, 61 App. Div. 612, 170 N. Y. 590; People v. Woodbeck, 55 App. Div. 227.

§ 36. **Branded cans, jars or bottles not to be sold, re-marked or used without consent of owner.** No person shall hereafter without the consent of the owner or shipper, use, sell, dispose of, buy or traffic in any milk can, jar or bottle, or cream can, jar or bottle, belonging to any dealer or shipper of milk or cream residing in the state of New York or elsewhere, who may ship milk or cream to any city, town or place within this state, having the name or initials of the owner, dealer or shipper, stamped, marked or fastened on such can, jar or bottle, or wilfully mar, erase or change ^{Tampering with label.}

Use of receptacles for other purposes.

by re-marking or otherwise said name or initials of any such owner, dealer or shipper, so stamped, marked or fastened upon said can, jar or bottle. Nor shall any person without the consent of the owner use such can, jar or bottle, for any other purpose than for milk or cream; nor shall any person without the consent of the owner place in any such can, jar or bottle, any substance or product other than milk or cream.

Milk used.

Labels on packages.

§ 37. **Regulations in regard to condensed milk.** No condensed milk shall be made or offered or exposed for sale or exchange unless manufactured from pure, clean, healthy, fresh, unadulterated and wholesome milk from which the cream has not been removed either wholly or in part, or unless the proportion of milk solids shall be in quantity the equivalent of eleven and one-half per centum of milk solids in crude milk, and of which solids twenty-five per centum shall be fats. No person shall manufacture, sell or offer for sale or exchange in hermetically sealed cans, any condensed milk unless put up in packages upon which shall be distinctly labeled or stamped the name of the person or corporation by whom made and the brand by which or under which it is made. When condensed milk shall be sold from cans or packages not hermetically sealed, the producer shall brand or label the original cans or packages with the name of the manufacturer of the milk contained therein. (*As amended by chapter 608 of the Laws of 1911.*)

Genesee Valley Milk Products Co. v. J. H. Jones, 128 N. Y. Supp. 191 (condensed skim milk).

Manufacture of imitation butter.

Addition of foreign substance.

§ 38. **Manufacture and sale of imitation butter prohibited.** No person by himself, his agents or employees, shall produce or manufacture out of or from any animal fats or animal or vegetable oils not produced from unadulterated milk or cream from the same, the article known as oleomargarine or any article or product in imitation or semblance of natural butter produced from pure, unadulterated milk or cream of the same; or mix, compound with or add to milk, cream or butter any acids or other deleterious substance or any animal fats or animal or vegetable oils not produced from milk or cream, so as to produce any article or sub-

stance or any human food in imitation or in semblance of natural butter, nor sell, keep for sale or offer for sale any article, substance or compound, made, manufactured or produced in violation of the provisions of this section, whether such article, substance or compound shall be made or produced in this state or elsewhere. Any person manufacturing, selling, offering or exposing for sale any commodity or substance in imitation or semblance of butter, the product of the dairy, shall be deemed guilty of a violation of this chapter, whether he sells such commodity or substance as butter, oleomargarine or under any other name or designation whatsoever and irrespective of any representations he may make relative to such commodity or substance. Any dealer in any article or product, the manufacture or sale of which is prohibited by this section, who shall keep, store or display such article or product, with other merchandise or stock in his place of business, shall be deemed to have the same in his possession for sale.

Sale of
imitation
butter.

Violation
irrespective
of repre-
sentations.

Display
equivalent
to offer for
sale.

People v. Arensburg, 40 Hun, 358; s. c., reversed, 103 N. Y. 388, 105 Id. 123; People v. Bremer, 69 App. Div. 14; People v. Clark, 124 N. Y. Supp. 1023; People v. Fried, 62 Misc. Rep. 240; People v. Hale, 62 Id. 240; People v. Hill, 44 Hun, 472; People v. Kerin, 39 Id. 631, 4 Crim. Rep. 140; People v. Laning, 40 App. Div. 227, 59 N. Y. Supp. 1057; People v. Mahaney, 41 Hun, 26; People v. Marx, 99 N. Y. 377; People ex rel. McAuley v. Wahle, 124 App. Div. 762; People v. Meyer, 44 Id. 1; People v. Schintzius, 61 Misc. Rep. 410; People v. Simpson Crawford Co., 62 Id. 240; People v. Teele, 131 App. Div. 87; Plumley v. Commonwealth of Massachusetts, 155 U. S. 461, 15 Sup. Ct. Rept. 154; Powell v. Commonwealth of Pennsylvania, 114 Penn. St. 265, 127 U. S. 678; Waterbury v. Egan, 3 Misc. Rep. 355, 52 State Rep. 421, 23 N. Y. Supp. 115; Waterbury v. Newton, 50 N. J. L. 534.

§ 39. **Manufacture or mixing of animal fats with milk, cream or butter prohibited.** No person shall manufacture, mix or compound with or add to natural milk, cream or butter any animal fats or animal or vegetable oils, nor make or manufacture any oleaginous substance not produced from milk or cream, with intent to sell the same as butter or cheese made from unadulterated milk or cream or have the same in his possession with such intent; nor shall any person solicit or take orders for the same or offer the same for sale, nor shall any such article or substance or compound so made or produced, be sold as and for butter or cheese, the product of the dairy. No person shall coat, powder or color with annatto or any coloring matter whatever, butterine

Manufac-
ture.

Sale.

Coloring.

or oleomargarine or any compound of the same or any product or manufacture made in whole or in part from animal fats or animal or vegetable oils not produced from unadulterated milk or cream by means of which such product, manufacture or compound shall resemble butter or cheese, the product of the dairy; nor shall he have the same in his possession with intent to sell the same nor shall he sell or offer to sell the same. No person by himself, his agents or employees, shall manufacture, sell, offer or expose for sale, butter that is produced by taking original packing stock or other butter or both and melting the same, so that the butter fat can be drawn off, then mixing the said butter fat with skimmed milk or milk or cream or other milk product and rechurning the said mixture, or that is produced by any similar process and is commonly known as boiled or process butter, unless he shall plainly brand or mark the package or tub or wrapper in which the same is put up in a conspicuous place with the words "renovated butter" or "process butter." If the same shall be put up, sold, offered or exposed for sale in prints or rolls, then the said prints or rolls shall be labeled plainly with printed letters in a conspicuous place on the wrapper with the words "renovated butter" or "process butter." If the same is packed in tubs or boxes or pails or other kind of a case or package the words "renovated butter" or "process butter" shall be printed on the top and side of the same in letters, at least, one inch in length, so as to be plainly seen by the purchaser. If such butter is exposed for sale, uncovered, not in a package or case, a placard containing the label so printed shall be attached to the mass of butter in such manner as to easily be seen and read by the purchaser. Every person selling, offering or exposing for sale at retail, "renovated butter" or "process butter," shall cause each parcel or package of such butter delivered to or for a customer to be wrapped in a light colored paper on which shall be printed in black letters, not less than three-eighths inch square and in Gothic type, the words "renovated butter" or "process butter." No person shall sell, offer or expose for sale, any butter or other dairy products containing a preservative, but this shall not be construed to prohibit the use of salt in butter or cheese, or spirituous liquors in club or other fancy cheese or sugar in

Process
butter.

Labelling.

Labelling
prints.

Labelling
tubs.

Display
placard.

Retail
wrappers.

Preserva-
tive.

condensed milk. No person, firm, association or corporation shall induce or attempt to induce any person to violate any of the provisions of this chapter. Any person, firm, association or corporation selling, offering or advertising for sale any substance, preparation or matter for use in violation of the provisions of this chapter shall be guilty of a violation of this section.

Inducing
violations.

People v. Arensberg, 40 Hun, 358; s. c., reversed, 103 N. Y. 388, 105 Id. 123; People v. Biersicker, 169 Id. 53; People v. Fried, 62 Misc. Rep. 240; People v. Hale, 62 Id. 240; People v. Hill, 44 Hun, 472; People v. Kerin, 39 Hun, 631; People v. Mack, 97 App. Div. 474; People v. Mahaney, 41 Hun, 26; People v. Simpson Crawford Co., 62 Misc. Rep. 240; People v. Waters, 114 Id. 669; Plumley v. Commonwealth of Massachusetts, 155 U. S. 461, 15 Sup. Ct. Rep. 154; Powell v. Commonwealth of Pennsylvania, 144 Penn. St. 265, 127 U. S. 678; Waterbury v. Newton, 50 N. J. L. 534.

§ 40. **Prohibited articles not to be furnished for use.** No keeper or proprietor of any bakery, hotel, boarding-house, restaurant, saloon, lunch-counter or place of public entertainment, nor any person having charge thereof or employed thereat, nor any person furnishing board for any others than members of his own family, or for any employees where such board is furnished for a compensation or as part of the compensation of any such employee, shall keep, use or serve therein either as food for his guests, boarders, patrons, customers or employees or for cooking purposes any article or substance made in violation of the provisions of this article. Any keeper or proprietor of any hotel, boarding-house, restaurant, saloon, lunch-counter or place of public entertainment who uses or serves therein for his guests any oleaginous substance as a substitute for butter, the manufacture or sale of which is not prohibited by the agricultural law, shall print plainly and conspicuously on the bill-of-fare, if there is one, the words, "Oleomargarine Used Here" and shall post up conspicuously in different parts of each room where such meals are served, signs in places where they can be easily seen and read, which shall bear the words, "Oleomargarine Used Here" in letters at least two inches in length and so printed as to be easily read by guests or boarders. (*As amended by chapter 357 of the Laws of 1909.*)

Food for
guests, em-
ployees,
etc.

Provisions
relative to
legal sub-
stitutes.

People v. Berwin, 77 N. Y. Supp. 859; People v. Brien, 117 Id. 246; People v. Dobbins, 113 Id. 1076; People v. Fox, 4 App. Div. 38, 74 State Rep. 500, 38 N. Y. Supp. 635; People v. Gottfried, 113 Id. 1086; People v. Guiton Co., 137 N. Y. Supp. 600.

Imitating
butter
color.

Sale or
gift of
color.

Dairy
terms pro-
hibited.

Weight,
seal and
label of
package.

Brick
stamp.

Penalties.

§ 41. Coloring matter, dairy terms, size of package, labeling, penalties. No person manufacturing with intent to sell any substance or article in imitation or semblance of butter or cheese not made exclusively from unadulterated milk or cream or both, with salt or rennet or both and with or without coloring matter or sage, but into which any animal, intestinal or offal fats, or any oils or fats or oleaginous substance of any kind not produced from pure, unadulterated milk or cream, or into which melted butter, or butter in any condition or state or any modification of the same, or lard or tallow shall be introduced, shall add thereto or combine therewith any annatto or compounds of the same, or any other substance or substances whatever, for the purpose or with the effect of imparting thereto a color resembling yellow, or any shade of yellow butter or cheese, nor introduce any such coloring matter or other substance into any of the articles of which the same is composed. And no person selling any oleaginous substance not made from pure milk or cream of the same as a substitute for butter shall sell, give away or deliver with such substance any coloring matter; nor shall any person manufacturing, selling or offering for sale any such goods make or sell them under any brand, device or label bearing words indicative of cows or the product of the dairy or the names of breeds of cows or cattle, nor use terms indicative of processes in the dairy in making or preparing butter; no such substance shall hereafter be sold, offered or exposed for sale in this state except it be sold in packages containing not more than five pounds, such packages to be wrapped and sealed, the original seal of which shall be unbroken and upon which seal shall be plainly printed the name and address of the manufacturer of said oleomargarine, and the said packages shall be plainly and conspicuously labeled with the word "Oleomargarine" in Gothic or equally conspicuous letters at least three-eighths of an inch high. The word "Oleomargarine" in large prominent letters shall be stamped by indentation on each separate brick or portion of the substance itself before it is wrapped and sealed.

Any person violating any of the provisions of sections forty or forty-one of the agricultural law shall forfeit and pay a penalty to the people of the state of New York of not less than fifty

dollars nor more than one hundred dollars for the first violation and not less than two hundred dollars nor more than five hundred dollars for the second and each subsequent violation. Whoever by himself or another violates any of the provisions of sections forty or forty-one of the agricultural law shall be guilty of a misdemeanor and upon conviction shall be punished by a fine of not less than one hundred dollars nor more than five hundred dollars or by imprisonment of not less than one month nor more than one year or by both such fine and imprisonment for the first offense and by not less than six months nor more than one year for the second offense. (*As amended by chapter 357 of the Laws of 1909.*)

Misde-
meanor.

People v. Arensburg, 40 Hun, 358; s. c., reversed, 103 N. Y. 388, 105 Id. 123; People v. Griffin, 128 N. Y. Supp. 946, 71 Misc. Rep. 566; People v. Hill, 44 Hun, 472; People v. Redding, 70 Misc. Rep. 420; People v. Guiton Co., 137 N. Y. Supp. 600.

§ 42. **Coloring matter in food products; analysis by state board of health.** No person or persons shall manufacture, sell or expose for sale any poisonous coloring matter for the coloring of food products of any kind, nor shall any person or persons use any poisonous coloring matter manufactured, sold, offered or exposed for sale within this state; nor shall any person or persons sell, offer or expose for sale any food product containing such poisonous coloring matter. The state commissioner of health shall cause samples of coloring matter that are exposed for sale upon the market for use in food products to be analyzed and report the results of such analysis to the legislature at the next session.

Poisonous
coloring
matter.

Analysis
by state
board of
health.

§ 43. **Manufacture and sale of imitation cheese prohibited.** No person shall manufacture, deal in, sell, offer or expose for sale or exchange any article or substance, in the semblance of or in imitation of cheese made exclusively of unadulterated milk or cream, or both, into which any animal, intestinal or offal fats or oils, or melted butter or butter in any condition or state or modification of the same, or oleaginous substances of any kind not produced from unadulterated milk or cream, shall be introduced.

§ 44. **When prohibitions do not apply to skim-milk or skim-cheese.** Except in the counties of New York and Kings, the pro-

Skim-
milk.

Skim-
cheese.

hibitions contained in this article against the sale of adulterated milk shall not apply to skim-milk, which is clean, pure, healthy, wholesome and unadulterated, except by skimming, sold for use in the county in which it is produced or an adjoining county, if it is sold for and as skimmed milk. The prohibitions in this article against the sale of cheese made from unadulterated* milk or cream, shall not apply to pure skim-cheese made from milk which is clean, pure, healthy, wholesome and unadulterated, except by skimming.

People v. Kibler, 106 N. Y. 321.

Sanitation.

Notice to
clean re-
ceptacles,
etc.

Applica-
tion for
license.

Statement.

§ 45. **Unclean receptacles and places for *keeping milk; notice to violators of provisions.** No person, firm, association or corporation, producing, buying or receiving milk for the purpose of selling the same for consumption as such, or for manufacturing the same into butter, cheese, condensed milk, or other human food, shall keep the same in utensils, cans, vessels, rooms, or buildings that are unclean or have unsanitary surroundings or drainage or in any condition whatsoever that would tend to produce or promote conditions favorable to unhealthfulness or disease. The commissioner of agriculture shall notify all persons, firms, associations or corporations, violating this section, to clean said utensils, cans, vessels, rooms or buildings, or to so improve the sanitary conditions that the law will not be violated, and if such notice is complied with in ten days' time, Sundays excepted, then no action shall lie for a violation of this section. Any person having charge of any milk gathering station where milk is received from the dairymen for the purpose of selling the same for consumption or shipping the same to market for consumption as human food before taking such charge or operating or working as such agent or person in charge shall apply to the commissioner of agriculture for a license to so work or operate or have charge, and shall at the time of making such application, file with the commissioner a statement under oath, setting forth the fact that he will not while having charge of or operating any such milk gathering establishment or while employed therein adulterate or suffer or permit the adulteration of any such milk or any product thereof during the term for which he may be licensed. After the

* So in the original.

applicant shall have complied with the foregoing provisions of this section, the commissioner of agriculture upon being satisfied that the applicant is a person of good moral character and a qualified and proper person to so have charge of or operate any such milk gathering station or establishment shall issue to said applicant a license, which shall qualify him to have charge of any such milk gathering station or establishment for the period of two years from the date of such license; provided, however, that where milk is to be bought from the dairymen at any such milk gathering station by the proprietor, person in charge or any agent of the proprietor of such station, such license shall be only for a period of one year, as provided in sections fifty-five to sixty-four, inclusive, of this article, and the matter required to be set forth in the application for a license under the provisions of this section shall be set forth in the application provided for in sections fifty-five to sixty-four in addition to the matters therein required. The person regularly doing the work of receiving, caring for and shipping the milk at any station or establishment, or in case more than one person is so employed then the foreman in charge of such works shall be deemed to be a person in charge of such station or establishment within the meaning and purposes of this section. Such license certificate shall be kept at such station or establishment where the license is so employed and shall be open to the inspection of the representatives of the department of agriculture and the public. Any person having charge of any milk gathering station or establishment as aforesaid shall keep a true and correct monthly record of the receipts of milk or other dairy products received at such station or establishment, and also a true and correct monthly record of all sales or shipments of milk, cream or other dairy products shipped or sold from such station or establishment, and shall also keep a true and correct monthly record of the amount of skim milk produced in such station or establishment and of the disposition of said skim milk. Such record shall be preserved at such station or establishment for at least two years after the same shall have been made and such records shall at all times be open to the inspection of the commissioner of agriculture, his assistants or agents. When cream is sold or shipped from

Issuing
license.

Exception.

Person in
charge.

Certificate

Records

Label on
bottle or
package.

any such station or establishment so selling or shipping milk for consumption as aforesaid, each original bottle or package of one quart or less of cream so shipped or sold shall bear a label securely attached to the side of such bottle or package on which shall be conspicuously printed the word "cream" in black letters of at least one-fourth of an inch in length or else the word "cream" shall be blown in the side of such bottle in plain raised letters of at least one-half an inch in length, and the top and side of each and every other original package or can containing cream or original crate or case containing bottles of cream so shipped or sold shall bear a label securely attached on which shall be conspicuously printed the word "cream" in black letters of at least one inch in length and also a plainly written or printed statement on the label stating from whom and what station the same is shipped and the name of the consignee and point of destination and the date on which the cream therein was produced by such separation or skimming. The shipment of each and every such original package of cream so shipped and not so labeled as herein required shall constitute a separate violation. When cream is so separated or skimmed from milk at any such station or establishment and the supply of milk on hand thereat at the time of the next regular daily shipment of milk therefrom, consisting of the total amount of milk in such shipment, together with that remaining on hand immediately after such shipment, is not thereby decreased or correspondingly less than the total quantity received during any period extending from some point of time before such skimming was done until the time of such shipment, together with the amount of milk on hand at the commencement of such period, and such decrease is not equal in amount to the quantity of milk that must have been used in so separating such cream in addition to the quantity otherwise there used or disposed of during such period, such fact is conclusive that skim milk or other foreign substance was added to such milk supply within such period and shall be presumptive evidence within the meaning of this section that the same was added to each can or vessel of milk in such shipment. When cream or skim milk is found to have been on the premises of any such station or establishment or is sold or shipped therefrom, such

Conclu-
sions as
to adul-
terating
with skim-
milk.

Presump-
tive evi-
dence.

Presump-
tions.

cream or skim milk so found or so sold or shipped therefrom shall be presumed to have been produced by separating or skimming at such station or establishment. In any action or proceeding relative to the adulteration of milk by removing cream therefrom or adding skim milk or other foreign substance thereto, it shall be presumed that when cream has been produced by so skimming or separating or butter has been manufactured, there was made at least five quarts of milk in the production of each quart of cream so produced and there was necessarily so produced thereby at least four quarts of skim milk to each quart of cream so produced, and that there was used at least nine quarts of milk in the production of each pound of butter so manufactured. If any such person so duly licensed shall thereafter refuse or neglect to keep and preserve full and complete records as herein required or shall refuse to exhibit such records to the commissioner of agriculture, his assistants or agents or shall violate any of the provisions of this section or any of the provisions of this chapter relative to milk or the products thereof he shall forfeit his license and shall be disqualified for a period of five years from being again licensed by the commissioner of agriculture. (*As amended by chapter 408 of the Laws of 1913.*)

Forfeiture
of license.

§ 46. **Unsanitary cans and receptacles condemned.** All cans, or receptacles used in the sale of milk, cream or curd for consumption, or in transporting or shipping the same to market or the delivery thereof to purchasers for consumption as human food, when found by the commissioner of agriculture or his assistants or agents to be in unfit condition to be so used by reason of being worn out, badly rusted, or with rusted inside surface, or unclean or unsanitary or in such condition that they can not be rendered clean and sanitary by washing, and will tend to produce or promote in milk, cream or curd when contained therein, bad flavors, unclean or unwholesome conditions favorable to unhealthfulness or disease, shall be condemned by the commissioner of agriculture or his assistants or agents. Every such can or receptacle when so condemned shall be marked by a stamp, impression or device, designed by the commissioner of agriculture, showing that it has been so condemned, and when so condemned shall not thereafter

Rusted or
unclean
cans.

Marking
condemned
cans.

Further
use of
condemned
cans.

be used by any person for the purpose of so selling, transporting or shipping milk, cream or curd.

§ 47. **Receptacles to be cleansed before returning; receptacles may be seized; evidence; violation; milk can inspectors.** Whenever any can or receptacle is used for transporting or conveying milk, cream or curd to market for the purpose of selling or furnishing the same for consumption as human food, which can or receptacle, when emptied, is returned or intended to be returned to the person so selling, furnishing or shipping such substance to be again thus used, or which is liable to continued use in so transporting, conveying, selling or shipping such substance as aforesaid, the consumer, dealer or consignee using, selling or receiving the milk, cream or curd from such can or receptacle, shall, before so returning such can or receptacle remove all substances foreign to milk therefrom, by rinsing with water or otherwise. When any such milk, cream or curd is sold within any city of this state or shipped into any such city, the fact of such shipment or sale shall be prima facie evidence that the same was so shipped or sold for consumption as human food. When any such can or receptacle is returned or delivered or shipped to any person or creamery so selling such substance within, or shipping the same into such city, it is deemed that such can or receptacle is liable to such continued use in so selling or shipping such substance therein for consumption as human food within the meaning and purposes of this section and section forty-six. No person shall place or suffer to be placed in any such can or receptacle any sweepings, refuse, dirt, litter, garbage, filth or any other animal or vegetable substance, nor shall any such consignee or other person through himself, his agent or employee, bring or deliver to any person or railroad or other conveyance any such can or receptacle for the purpose of such return, or any milk, cream or curd can or receptacle for the purpose of delivery or shipment to any person or creamery engaged in so selling or shipping such substances for consumption as human food, which can or receptacle contains such foreign substance or which has not been rinsed as herein provided. The word "curd" as used in this section and section forty-six applies to the substance otherwise known as "pot cheese" or "cottage

Cleansing
receptacles.

Evidence.

Cans in
use.

Garbage,
etc., in
cans.

Unwashed
cans.

Curd.

cheese." Whenever any such can or receptacle is used, returned, delivered or shipped in violation of this section, or of section forty-six of this chapter, every such use, return, delivery or shipment of each such can or receptacle shall be deemed a separate violation thereof. Such cans or receptacles so used, returned, delivered or shipped in violation of this section or of section forty-six may be seized by the commissioner of agriculture, his assistants or agents and held as evidence of such violation. For the proper enforcement of this section and section forty-six, the commissioner of agriculture may appoint two milk can inspectors to be stationed chiefly in the city of New York who shall receive the usual compensation of other agents of the department of agriculture. (*As amended by chapter 608 of the Laws of 1911.*)

Separate
violation.

Can
seizure.

Milk can
inspectors.

People v. Freedenberg, 155 App. Div. 199.

§ 48. **Manufacturer's brand of cheese.** Every manufacturer of whole-milk cheese may put a brand or label upon such cheese indicating "whole-milk cheese" and the date of the month and year when made; and no person shall use such a brand or label upon any cheese made from milk from which any of the cream has been taken. The commissioner of agriculture shall procure and issue to the cheese manufacturers of the state, on proper application therefor, and under such regulations as to the custody and use thereof as he may prescribe, a uniform stencil brand or labels bearing a suitable device or motto, and the words, "New York state whole-milk cheese." Every such brand or label shall be used upon the outside of the cheese and shall bear a different number for each separate factory. The commissioner shall keep a book, in which shall be registered the name, location and number of each manufactory using the brands or labels, and the name or names of the persons at each manufactory authorized to use the same. No such brand or labels shall be used upon any other than whole-milk cheese or packages containing the same. (*As amended by chapter 207 of the Laws of 1910.*)

Manufacturers'
brand.

State
brand.

Use of
brand.

Record
book.

§ 49. **Use of false brand prohibited; branding of skim-milk cheese regulated.** No person shall offer, sell or expose for sale, in any package, butter or cheese which is falsely branded or labeled.

Selling
cheddar
cheese.

Branding
cheddar
cheese.

Adoption
of county
trade mark.

Filing
trade mark.

Infringe-
ments.

Deception
in dairy
products.

Preserva-
tion of
public
health.

First
violation.

No person shall sell, offer or expose for sale cheese commonly known as cheddar cheese made from skimmed or partially skimmed milk unless the same is branded to show that it is skim-milk cheese. All such cheese so sold, offered or exposed for sale shall be branded with the words "skim-milk cheese," or if such cheese contains thirteen per centum of milk fat or over, it may be branded "medium skim-milk cheese," or if it contains eighteen per centum of milk fat or over, it may be branded "special skim-milk cheese." Such branding shall be upon the sides of both the cheese and the container. The branding herein provided shall be in block letters at least one-half an inch square. (*As amended by chapter 456 of the Laws of 1913.*)

§ 50. **County trade marks.** At a regular or special meeting of a county dairymen's association in any county of the state there may be adopted a county trade mark, by a majority of the members present and voting, to be used as a trade mark by a person manufacturing pure unadulterated butter or full-cream cheese in such county. The secretary of the association shall forthwith send to the commissioner of agriculture a copy of such trade mark, which copy he shall place on file in his office, noting thereupon the day and hour he received the same. But one county trade mark for butter and for cheese shall be placed on file for the same county. No association shall adopt any trade mark of any county already on file, or use that of any other county in the formation of a trade mark.

People v. Luhrs, 195 N. Y. 377.

§ 51. **Object and intent of this article.** This article and each section thereof are declared to be enacted to prevent deception in the sale of dairy products, and to preserve the public health, which is endangered by the manufacture, sale and use of the articles or substances herein regulated or prohibited.

§ 52. **Penalties.** Every person violating any of the provisions of this chapter, shall forfeit to the people of the state of New York the sum of not less than fifty dollars nor more than one hundred dollars for the first violation and not less than one hun-

dred dollars nor more than two hundred dollars for the second and each subsequent violation. When such violation consists of the manufacture or production of any prohibited article, each day during which or any part of which such manufacture or production is carried on or continued, shall be deemed a separate violation. When the violation consists of the sale, or the offering or exposing for sale or exchange of any prohibited article or substance, the sale of each one of several packages shall constitute a separate violation, and each day on which any such article or substance is offered or exposed for sale or exchange shall constitute a separate violation. When the use of any such article or substance is prohibited, each day during which or any part of which said article or substance is so used or furnished for use, shall constitute a separate violation, and the furnishing of the same for use to each person to whom the same may be furnished shall constitute a separate violation. Whoever by himself or another violates any of the provisions of articles three, four, six, eight and nine or sections three hundred fourteen and three hundred fifteen of this chapter or of sections one hundred six, one hundred seven and one hundred eight of this chapter shall be guilty of a misdemeanor, and upon conviction shall be punished by a fine of not less than fifty dollars, nor more than two hundred dollars, or by imprisonment of not less than one month nor more than six months or by both such fine and imprisonment, for the first offense; and by six months' imprisonment for the second offense.

Second violation.

Separate violation.

Penalties.

Friedgood v. Kline, 67 Misc. Rep. (A. T.) 428, 123 N. Y. Supp. 247; People v. Briggs, 121 App. Div. 927; People v. Briggs, 193 N. Y. 457; People v. Anton Koster, 121 App. Div. 852; People v. Spencer as Trustee, 201 N. Y. 105 (vinegar cumulative penalties); People v. Wiggins, 201 N. Y. 151 (not proper party def't.).

§ 53. **Butterine and similar products not to be purchased by certain institutions.** No money appropriated by law for maintenance and support in whole or in part of a state institution; nor money received by a charitable, benevolent, penal or reformatory institution from the state, or from a county, city or town thereof, or appropriated by such county, city or town for the maintenance or support in whole or in part of such institution; nor money belonging to or used for the maintenance or support of such institution, shall be expended for the purchase of, or in payment for, but-

terine, oleomargarine, lard, cheese, or articles or products in imitation or semblance of natural butter or cheese produced from pure unadulterated milk or cream from the same, which articles or products have been rendered or manufactured in whole or in part from animal fats, or animal or vegetable oils not produced from unadulterated milk or cream from the same.

§ 54. **Purchase, sale and use of butterine and similar products prohibited in certain institutions.** No officer, manager, superintendent or agent of an institution mentioned in section fifty-three of this chapter, shall purchase for the use of such institution articles or products, for the purchase of which the money appropriated by law, or by a county, city or town, is forbidden to be used by section fifty-three of this chapter, and no person shall sell to, or for the use of such institution, such articles or products. Nor shall such articles or products be used as articles of food or for cooking purposes in such institutions within this state.

§ 55. **Licensing of milk gathering stations where milk is bought.** On and after September first, nineteen hundred and thirteen, no person, firm, association or corporation, shall buy milk within the state for the purpose of shipping the same to any city for consumption or for the manufacture thereof into butter, cheese, condensed milk or other human food, unless such business be regularly transacted at an office or station within the state and unless such person, firm, association or corporation be duly licensed as provided in this and the ensuing sections of this article. Every such person, firm, association or corporation before engaging or continuing in the business of buying milk for the purposes aforesaid, shall, annually, on or before August first, file an application with the commissioner of agriculture for a license to transact such business. The application shall state the nature of the business, as hereinabove set forth, the full name of the person or corporation applying for the license, and, if the applicant be a firm or association, the full name of each member of such firm, or association, the city, town or village and street number at which the business is to be conducted, and such other facts as the commissioner of agriculture shall prescribe. The applicant shall

Prohibition of purchase of milk.

Application for license to buy milk.

Statement. Name.

Address.

further satisfy the commissioner of his or its character, financial responsibility and good faith in seeking to carry on such business. The commissioner shall thereupon issue to such applicant, on payment of ten dollars, a license entitling the applicant to conduct the business of buying milk from dairymen for the purposes aforesaid at an office or station at the place named in the application until the first day of September next following; provided, however, that if the application be presented in the month of July, and if the applicant so elects, such license may be granted to begin on the first day of September next following and run for a term of one year. A license shall not be issued, however, to any applicant if during the year preceding the filing of the application a complaint from any seller of milk shall have been filed with the commissioner against such applicant for any of the grounds specified in section fifty-seven hereof, and such complaint shall have been established as true and just to the satisfaction of the commissioner after such complaint shall have been investigated by the commissioner in the manner provided by section fifty-six hereof.

License
fee.

Issuing
license.

Ground
for refus-
ing to issue
license.

The term "station" or "milk gathering station," as used in this and the ensuing sections of this article, shall include an established office where the business of buying milk as herein provided is carried on, with or without a place or premises in connection therewith for the physical handling of milk. (*As added by chapter 408 of the Laws of 1913.*)

Defini-
tion.

§ 56. **Power of commissioner to investigate.** The commissioner and his assistants shall have power to investigate upon the complaint of any interested person, or of his own motion, the record of any person, firm or corporation applying for or holding a license, or any transaction involving the purchase by such applicant or licensee or attempted purchase of milk for shipment as provided in section fifty-five; and for such purpose may examine the ledgers, books of account, memoranda or other documents of any such person, firm, association or corporation applying for or holding a license and may take testimony therein under oath; but information relating to the general business of any such person, firm, association or corporation, disclosed by such investigation

Complaint.

Examina-
tion of
documents.

Adjust-
ment.

Service
of notice.

Time and
place of
service.

Hearing.

and not relating to the immediate purpose thereof shall be deemed of a confidential nature by the commissioner, his assistants, representatives and employees. When a complaint is filed with the commissioner, he shall attempt to secure an explanation or adjustment, and, failing this within ten days, he shall cause a copy of the complaint, together with a notice of the time and place for a hearing thereon, to be served personally or by mail upon said applicant or licensee. If served by mail, such complaint and notice shall be directed to the applicant or licensee at his place of business, with postage fully prepaid thereon. Such service shall be made at least seven days before the hearing. At the time and place appointed for such hearing, the commissioner or his assistants shall hear the parties to the complaint, shall have power to administer oaths and shall enter in the records of the office of the commissioner of agriculture a decision either dismissing such complaint or specifying the facts which he deems established on such hearing. *(As added by chapter 408 of the Laws of 1913.)*

Judgment
against
applicant.

Intent to
defraud
vendor.

Combina-
tions.

Intent to
defraud
customers.

§ 57. **Granting and revoking licenses.** The commissioner of agriculture may decline to grant a license or may revoke a license already granted when he is satisfied of the existence of the following cases or either of them:

1. Where a money judgment has been secured by any milk producer and has been entered against such applicant or licensee and remains unsatisfied of record.

2. Where there has been a failure to make prompt settlements to persons from whom he buys milk, with intent to defraud.

3. Where there have been combinations to fix prices.

4. Where there has been a continual course of dealing of such nature as to satisfy the commissioner of the inability of the applicant or licensee to properly conduct the business or of an intent to deceive or defraud customers.

5. Where there has been a continued and persistent failure to keep records required by the commissioner or by law. *(As added by chapter 408 of the Laws of 1913.)*

§ 58. **Certiorari to review.** The action of the commissioner of agriculture in refusing to grant a license, or in revoking a license

granted under section fifty-five, shall be subject to review by writ of certiorari, and if such proceedings are begun to review the revocation of license, the license shall be deemed to be in full force and effect until the final determination of certiorari proceedings and all appeals therefrom, or if such license shall have been refused the applicant for a license shall not be deemed to have violated the provisions of section fifty-five, prohibiting the transaction of the business therein specified without a license if the fee for such license shall have been paid. (*As added by chapter 408 of the Laws of 1913.*)

License to remain in force.

§ 59. **Records to be kept.** Every licensed proprietor of a milk gathering station shall keep, in such form as the commissioner of agriculture may prescribe, a record of transactions of purchases of milk by him. (*As added by chapter 408 of the Laws of 1913.*)

§ 60. **Right to review.** If either party to the transaction of purchase and sale between a milk producer or a milk seller and a licensed buyer of milk shall be dissatisfied relative to any transaction of purchase and sale of milk between a milk seller and a licensed buyer of milk, he may apply to the commissioner of agriculture, in writing, within sixty days after the delivery of such milk to the licensed buyer, for investigation. The commissioner of agriculture shall treat such application as a complaint, and shall cause a full investigation of the transaction complained of to be made either by himself or one of his assistants, in the manner provided by section fifty-seven. (*As added by chapter 408 of the Laws of 1913.*)

Dissatisfied party may apply for investigation.

§ 61. **Offenses.** Any person who, being a buyer of milk for shipment for the purposes set forth in section fifty-five, whether such person be licensed or whether his business be transacted at a station or otherwise, shall (a) fail to make prompt payments for milk purchased, with intent to defraud, or (b) shall make any false or misleading statement or statements enumerated in sections fifty-five to fifty-nine inclusive, with intent to deceive, or (c) enter into any combination to fix prices, or (d) not being licensed, shall conduct the business of buying milk for shipment

as provided in section fifty-five, or (e) being licensed or otherwise, engages in such business without having a station or office therefor, or (f) fails to conform to any requirement of or violates any provision of sections fifty-five to fifty-nine, inclusive, with intent to deceive a seller of milk, shall be guilty of a misdemeanor. (*As added by chapter 408 of the Laws of 1913.*)

§ 62. See note.

§ 63. See note.

§ 64. See note.

NOTE.—These sections did not become law.

NOTE.—Section 64-a follows section 95.

ARTICLE 4

Adulterated Vinegar

Section 70. Definition of cider vinegar and adulterated vinegar.

71. Manufacture and sale of adulterated or imitation vinegar prohibited.

72. Packages containing vinegar to be branded.

73. Facts published.

§ 70. **Definition of cider vinegar and adulterated vinegar.** The term "cider vinegar" as used herein shall be construed to mean vinegar made exclusively from pure apple juice. All vinegar which contains any proportion of lead, copper, sulphuric acid or other ingredients injurious to health, or any artificial coloring matter, or which has not an acidity equivalent to the presence of at least four per centum, by weight, of absolute acetic acid, or cider vinegar which has less than such an amount of acidity, or less than two per centum of cider vinegar solids shall be deemed adulterated. (*As amended by chapter 210 of the Laws of 1909, and by chapter 26 of the Laws of 1912.*)

People v. Albion Cider and Vinegar Co., 118 N. Y. Supp. 15; People v. Girard, 145 N. Y. 105; People v. Heinz Co., 90 App. Div. 408; People v. Niagara Fruit Co., 75 Id. 11, 173 N. Y. 629; People v. Windholz, 68 App. Div. 552; People v. Windholz, 92 Id. 569 (constitutional question); Rossano v. Kaminsky, 134 N. Y. Supp. 895; Friedgood v. Kline, 67 Misc. 428, 123 N. Y. Supp. 247.

§ 71. **Manufacture and sale of adulterated or imitation vinegar prohibited.** No person shall manufacture for sale, keep for sale or offer for sale:

1. Any adulterated vinegar.
2. Any vinegar or product in imitation or semblance of cider vinegar, which is not cider vinegar.
3. As or for cider vinegar, any vinegar or product which is not cider vinegar.

§ 72. **Packages containing vinegar to be branded.** Every manufacturer or producer of vinegar shall plainly brand each cask, barrel, or other container of such vinegar with his name and place of business, the kind of vinegar contained therein and the substance or substances from which it was made. And no person

Marking
container.

Cider
vinegar
stock.

shall mark or brand as or for cider vinegar any package containing that which is not cider vinegar. Every person who sells any vinegar, except it be delivered to the purchaser in the unbroken package in which such seller received it, shall plainly and conspicuously mark or brand the receptacle or container in which such vinegar is delivered to the purchaser, whether such receptacle or container be furnished by the seller or purchaser, with a label showing the kind of vinegar so delivered and the substance or substances from which it was made. Nothing herein shall be deemed to prohibit the sale of cider vinegar stock, provided it be sold as and for such in compliance with the provisions of this article as to marking or branding. The term "cider vinegar stock" when used herein, shall be construed to mean acetified apple juice of less acidity than that required for vinegar which contains not less than two per centum of apple solids and sufficient alcohol to develop the acidity required in vinegar. (*As amended by chapter 210 of the Laws of 1909, and by chapter 228 of the Laws of 1911.*)

People v. Luhrs, 195 N. Y. 377 (trade marks).

§ 73. **Facts published.** The commissioner of agriculture shall publish the name and business address of each person, firm or corporation convicted of a violation of this article, with such statement of the facts of the violation as he may deem proper. (*As amended by chapter 210 of the Laws of 1909 and by chapter 156 of the Laws of 1910.*)

ARTICLE 5**Diseases of Domestic Animals**

Section 90. Suppression of infectious and contagious disease.

91. Commissioner to issue notice.

92. Farms to be quarantined; inspection of premises.

93. Detention and destruction of animals.

94. Care of diseased animals; experiments.

95. Employment of veterinary surgeons.

*64-a. Tuberculin, issuing certificates relative to tuberculin tested cattle, branding of tuberculous animals.

96. Regulations, the enforcement thereof and expenses incurred by sheriff.

97. Fines and penalties.

98. Bureau of veterinary service; chief veterinarian; appraisers.

99. Appraisal of diseased animals.

100. Certificate of appraisal.

101. Post-mortem examination of animals.

102. Compensation of owners of animals destroyed.

103. Expenses.

104. Federal regulations. (Repealed by chapter 232 of the Laws of 1909.)

105. Rights of federal inspectors. (Repealed by chapter 232 of the Laws of 1909.)

106. Shipping, slaughtering and selling veal for food.

107. Shipping veal.

108. Receiving veal for shipment by common carriers.

§ 90. **Suppression of infectious and contagious diseases.** No person shall knowingly bring any domestic animal into this state which is suffering with an infectious or contagious disease. Any person knowingly bringing a domestic animal suffering with an infectious or contagious disease into this state shall be liable to and shall pay all damages, suffered or caused by the spreading of such disease, to the owner or owners of animals to which such disease is imparted by such animal or animals so brought in, as liquidated damages in addition to the penalties to the state of New York,

Willful importation of diseased animals.

Damage for violation.

Interstate traffic.

* So numbered in original.

as provided in section fifty-two of the agricultural law; provided that nothing herein contained shall be construed to prevent or make unlawful the transportation of such animals through this state on railroads or boats. Any person bringing into the state such animals which are used for breeding, feeding or dairy purposes without taking due precaution to ascertain whether such animals are suffering with such a disease shall be presumed to have brought them in knowingly and in violation of the statute.

Due precaution.

Prompt action required

Boards of health to notify commissioner.

Report of cattle imported.

Permit to remove.

Detention for inspection.

Under the foregoing provisions of this section, any animals, received from outside the state and distributed under the supervision of the United States department of agriculture or the state department of agriculture and for which a permit or certificate has been issued by either of said departments, shall be deemed to have been handled with due precaution. Whenever any infectious or contagious disease affecting domestic animals shall exist, be brought into or break out in this state the commissioner of agriculture shall take measures to promptly suppress the same, and to prevent such disease from spreading. The local boards of health shall notify the commissioner of the existence of infectious or contagious disease affecting domestic animals in the districts subject to their jurisdiction. Any person importing or bringing into this state neat cattle for dairy or breeding purposes shall report immediately upon bringing such cattle into the state to the commissioner of agriculture in writing, giving a statement of the number of cattle thus brought in, the place where they were procured, the lines over which they were brought and their point of destination within the state, stating when they will arrive at such point of destination, and upon the filing with the commissioner of agriculture at the time of making the said report, a certificate issued by a duly authorized veterinary practitioner, to the effect that he has duly examined said animals and that said animals are free from any infectious or contagious disease, the commissioner of agriculture may issue a permit to said person to remove said cattle immediately. Otherwise, said person shall hold or detain such animals at least ten days at such point of destination for inspection and examination, provided they are not sooner examined or inspected, by the commissioner of agriculture or his duly authorized agent. Each animal brought into

the state in violation of the above provisions shall constitute a Separate violation. separate and distinct violation of this chapter. The provisions of this section, relating to the importation of neat cattle for dairy or breeding purposes, shall not apply to cattle imported into this state at a point where there is federal inspection, so far as the same shall relate to making advance reports to the commissioner of agriculture. But parties importing or receiving such cattle at such places shall give such information to the commissioner of agriculture as he may from time to time request relative to such cattle so imported or brought in. Exceptions. *(As amended by chapter 240, § 1, and chapter 312 of the Laws of 1909.)* Information to commissioner.

§ 91. **Commissioner to issue notice.** He shall issue and publish a notice, stating that a specified infectious or contagious disease exists in the state or in any designated county or other geographical district of the state, and warning all persons to seclude in the premises where they may be at the time, all animals within the state or within such county or district or an adjoining county or district, that are of a kind susceptible to contract such disease, and ordering all persons to take such precaution against the spreading of the disease, as the nature thereof may in his judgment render necessary or expedient, and which he may specify in such notice. Seclusion of animals. Such notice shall be published in such newspapers, and be posted in such manner as the commissioner may designate, and as, in his judgment, are most likely to give notice thereof. Publishing notices. For this purpose he may post notices on public service poles other than those carrying wires transmitting electricity for light or power or fences upon the highway or buildings abutting upon the highway, provided, if such fences or buildings are privately owned, the owners thereof shall consent to such posting. Posting notices. No person shall tear down, mutilate, deface or destroy any such notice or order issued by the commissioner of agriculture and posted as provided herein during the pendency of said order or notice. Destroying notices. *(As amended by chapter 313 of the Laws of 1909.)*

§ 92. **Farms to be quarantined; inspection of premises.** The commissioner or an assistant commissioner or the chief veterinarian, shall order any premises, farm or farms where such dis-

Quarantine.

Sanitation of stables.

Inspection of stables.

ease exists, or recently existed, to be put in quarantine, so that no domestic animal be removed from or brought to the premises or places quarantined, and shall prescribe such regulations as he may judge necessary or expedient to prevent the communication of the disease by infection or contagion, in any way from the places so quarantined. The commissioner may adopt and enforce rules regulating the sanitation of stables and other buildings used for the stabling of cattle for the purpose of preventing the existence and spread of infection and contagion among cattle. He may provide for the inspection and examination of all such stables and buildings. (*As amended by chapter 315 of the Laws of 1909.*)

Detention of animals entering the state.

Disposal of hides, etc.

Destruction of animals.

Tuberculosis.

Physical examination.

Tuberculin test.

§ 93. **Detention and destruction of animals.** The commissioner or an assistant commissioner or the chief veterinarian may order all or any animals coming into the state to be detained at any place or places for the purpose of inspection and examination. The commissioner may prescribe regulations for the destruction of animals affected with infectious or contagious disease, and for the proper disposal of their hides and carcasses, and of all objects which might carry infection and contagion. Whenever in his judgment necessary for the more speedy and economical suppression or prevention of the spread of any such disease, he may cause to be slaughtered, and to be afterward disposed of, in such manner as he may deem expedient, any animal or animals, which, by contact or association with diseased animals, or by other exposure to infection or contagion, may be considered or suspected to be liable to contract or communicate the disease sought to be suppressed or prevented. The commissioner may direct that an animal shall be condemned, quarantined or slaughtered as tuberculous, under the provisions of this article, if it shall be found to be tuberculous by a physical examination. If the owner of animals suspected of being tuberculous desires to have such animals tested with tuberculin and enters into written agreement with the state in the manner prescribed by the commissioner of agriculture, before such test is made, to the effect that he will disinfect his premises and either consent to the slaughter of the animals responding to such test, or hold them and their products in strict quarantine, pursuant to the directions of the commissioner of agriculture,

such test shall be made by a medical or veterinary practitioner designated by the commissioner. The commissioner may also in his discretion order such tuberculin test to be made, and if the animal responds to such test, he may cause such animal to be slaughtered or held in strict quarantine. (*As amended by chapter 315 of the Laws of 1909.*)

§ 94. Care of diseased animals; experiments. If after examination an animal is, in the judgment of the person making the examination, suffering from tuberculosis, such animal shall be slaughtered under the provisions of this article, or, if the commissioner deems that a due regard for the public health warrants it, he may enter into a written agreement with the owner, subject to such conditions as the commissioner of agriculture may prescribe, for the separation and quarantine of such diseased animal or animals. Subject to the regulations of the department of agriculture, such diseased animal or animals may continue to be used for breeding purposes and its or their milk, after pasteurization at one hundred and eighty-five degrees Fahrenheit, may be used for the manufacture of butter or cheese or for sale. The young of any such diseased animal or animals shall, immediately after birth, be separated from their mothers, but may be fed the milk drawn from such affected animal or animals so separated and quarantined after such milk has been pasteurized as herein provided. The owner of a herd of cattle, within the state, may apply to the commissioner of agriculture for examination of his herd by the tuberculin test; said application to be in writing upon a blank form provided by the commissioner of agriculture and to include an agreement on the part of the owner or owners of the herd to improve faulty sanitary conditions; to disinfect his premises, should diseased cattle be found, and to follow instructions of the commissioner of agriculture designed to prevent the reinfection of the herd and to suppress the disease or prevent the spread thereof. The commissioner of agriculture shall, as soon as practicable, cause such cattle to be examined accordingly, subject to the provisions of this chapter. When the commissioner deems that the conditions warrant it he may make and issue to such owner a certificate that upon such examination such herd was found free from tuberculosis or that the owner has complied

Slaughter
or quaran-
tine.

Quarantined
animals.

Young of
diseased
animals.

Applica-
tion for
tuberculin
test.

Certificate
of health
of herd.

with the provisions of this section by causing all affected animals to be separated from the herd and quarantined as provided herein subject to the regulations of the department of agriculture. The commissioner of agriculture may determine the place of slaughter of an animal to be killed under the provisions of this chapter. The commissioner may experiment or cause such experiments to be made or performed as he may deem necessary to ascertain or determine the best methods or means for the control, suppression or eradication of communicable or infectious disease or diseases affecting domestic animals. No person shall sell any animal known to have a communicable or infectious disease except for immediate slaughter unless such sale be made under a written contract signed by both parties specifying the disease with which such animal is infected, a copy of which shall be filed in the office of the commissioner of agriculture. No person shall knowingly inject into any bovine animal as and for tuberculin any substance which is not tuberculin.

§ 95. Employment of veterinary surgeons. The commissioner may employ such and so many medical and veterinary practitioners and such other persons as he may, from time to time, deem necessary to assist him in discharging the duties imposed upon him by this article, and may fix their compensation, to the amount appropriated therefor. No animal shall be destroyed by the commissioner or by his order on the ground that it is a diseased animal, unless first examined by a veterinary practitioner in the employ of the commissioner or whose work is approved by the commissioner, nor until such practitioner renders a certificate to the effect that he has made such examination, that in his judgment such animal is affected with a specified infectious or contagious disease, or that its destruction is necessary in order to suppress or aid in suppressing such disease, or to prevent such disease, or to prevent the spread thereof, specifying the reasons for such necessity. (*As amended by chapter 316 of the Laws of 1909.*)

***§ 64-a. Tuberculin, issuing certificates relative to tuberculin tested cattle, branding of tuberculous animals.** Any person using

* This section erroneously numbered 64-a; apparently intended to follow § 95, which was § 64 of former Agricultural Law.

or injecting tuberculin into bovine animals for the purpose of determining whether they are affected with the disease known as tuberculosis, shall take the temperatures of such animals before, during and after such injections, according to the most approved methods, shall keep a correct record of such temperatures so taken and shall send a report within one week thereafter to the commissioner of agriculture giving a detailed account of the tests thus made, including the description of animals, the location of the farm or farms upon which tests were made and the name and address of the owner or custodian, and such other information concerning the use of tuberculin as may be called for by the commissioner of agriculture. A report of each such test so made shall be accompanied by a statement of the owner or person in charge giving the date upon which the said animals were last tested, if at all, and if known, with tuberculin, and the name and address of the person or persons making such test. If no such test has been made within four weeks, or if the animals were not treated in any manner for the purpose of preventing their normal reaction to tuberculin, then the report shall be accompanied by a statement setting forth such facts and the said statement shall be duly verified by the person making such statement. No person shall give a certificate showing or tending to show that an animal has been tested and found not affected with tuberculosis, unless the character of such test is stated and it was made in a proper way, and unless such animals failed to give a typical reaction. Any bovine animal in which tuberculosis is clearly diagnosed by a physical examination or a tuberculin test, or both, shall be branded upon the forehead or upon the right side of the neck from six to ten inches back of the jaw bone with a capital "T" not less than two inches high, one and one-half inches wide, with mark one-fourth of an inch wide; such branding shall not be construed as cruelty to animals within the meaning of the penal law; however, any animal which has reacted to the tuberculin test and appears physically sound may be retained for breeding or dairy purposes without such branding, provided a full description of such animal, sufficient for its identification and satisfactory to the commissioner of agriculture, is furnished to the commissioner of agriculture and a permit from said commissioner is issued for keeping such ani-

Taking
tempera-
ture.Record of
tempera-
tures.Report to
commis-
sioner.Previous
test.

Certificate.

Branding
tuberculous
animals.

Exceptions.

Issuing permit for exemption.

Label for tuberculin.

Report of distribution of tuberculin.

Tuberculin accounted for.

Treatment to prevent reaction.

Sale of reacting animals.

mal in such manner. Such permit shall not be issued except upon the condition that the animal will thereafter be kept in a proper manner with regard to the protection of the public health and the health of other animals, and no such animal shall be sold or removed from the premises without written permission from the commissioner of agriculture, and all such animals shall be accounted for by the owner or custodian whenever called upon by the commissioner of agriculture to do so. All tuberculin sold, given away or used within this state, shall bear a label stating the name and address of the person or firm or institution making it and the date of preparation. All persons selling or giving away tuberculin shall report to the commissioner of agriculture the amount of tuberculin sold or given away, the degree of strength, the name and address of the person to whom sold or given and the date of delivery; said report shall include the address of and be signed by the person making it. Persons buying or procuring tuberculin shall not use or dispose of it until assured in writing by the person from whom the tuberculin is received that its delivery to said person has been reported to the commissioner of agriculture or unless they have themselves reported its receipt to the commissioner of agriculture with information required to be furnished by those who distribute tuberculin, and such persons buying or procuring tuberculin shall keep a correct record of the amount received, the amount used and the amount on hand and shall report these facts whenever any tuberculin is used, and if at any time tuberculin left on hand is not deemed fit for use or is not to be used, the said person shall forward the same to the commissioner of agriculture with a statement of where and when procured, the amount procured at the time, the amount of it that was used, and his name and address. If the amount forwarded to the commissioner of agriculture and the amount used does not total the amount procured or purchased a statement shall be made as to what became of the remainder. No person or persons shall treat any bovine animal with any material or substance nor in any manner for the purpose of preventing a normal reaction on the part of such animal to the tuberculin test. No person shall knowingly sell or offer for sale any animal that has reacted to the tuberculin test, without giving information of such reaction to the purchaser. No

animal that has reacted to the tuberculin test shall be sold or removed from the premises where the test was made without permission in writing from the commissioner of agriculture. Any veterinary surgeon violating any of the provisions of this section shall, in addition to the penalties and fines prescribed in the agricultural law, forfeit his certificate to practice and thereafter be debarred from practicing his profession within the state of New York until such disability is legally removed. (*As added by chapter 588 of the Laws of 1909.*)

Removal.

Penalties.

§ 96. Regulations, the enforcement thereof and expenses incurred by sheriff. The commissioner may prescribe such regulations as in his judgment may be thought suited for the suppression or the prevention of the spread of any such disease, and for the disinfection of all premises, buildings, railway cars, vessels, and other objects from or by means of which infection or contagion may take place or be conveyed. He may alter or modify, from time to time, as he may deem expedient, the terms of all notices, orders and regulations issued or made by him, and may at any time cancel or withdraw the same. He may call upon the sheriff, under sheriff or deputy sheriff, to carry out and enforce the provisions of any notice, order or regulation which he may make, and all such sheriffs, under sheriffs and deputy sheriffs shall obey and observe all orders and instructions which they may receive from him in the premises. In all counties, the expenses incurred by the sheriff, under sheriff or a deputy sheriff in carrying out and enforcing the provisions of such notice, order or regulation shall be a county charge, to be audited and paid in the same manner as other charges by the sheriff, under sheriff or deputy sheriff, including in this requirement any county affected by a local or special act relating to the sums payable by the county for compensation or disbursements, or both, to its sheriff, under sheriff or any deputy sheriff; and no such local or special act shall be effectual to prevent the payment of the expenses herein made a county charge over and above any other sum or sums, fixed or otherwise, provided in such act to be paid by the county to the sheriff, under sheriff or deputy sheriffs for compensation or to cover expenses, or both, and notwithstanding any provision of any such act relieving

Regulations for suppression of disease.

Modification of notice.

Sheriff to enforce.

Expense incurred by sheriff.

the county from charges imposed by law which are incurred by its sheriff, under sheriff or a deputy sheriff. If the commissioner shall lay a quarantine upon a city or any portion thereof he may call upon the commissioner of public safety and the police department of said city to enforce the provisions of any notice, order or regulation which he may make within the quarantine district or such portion thereof as lies within the city limits, and the commissioner of public safety and the police department shall obey and observe all such orders and instructions so made or issued, and all expenses incurred by the commissioner of public safety and the police department in enforcing the quarantine as herein provided shall be a city charge. If the commissioner shall quarantine any particular district or territory for the purpose of stopping or preventing the spread of the disease known as rabies, and if any dog be found within the said quarantine district in violation of said quarantine or regulation, any person may catch or cause to be caught such dog and have him impounded or confined. If the said dog is thereafter not found to be affected with the disease known as rabies, it may be released to the owner upon payment of a penal sum of ten dollars to the commissioner of agriculture, who shall upon receipt and acceptance of the same issue to the said owner a release which shall entitle the said owner to the possession of said dog. If such penalty is not paid within three days after said dog is impounded, or if it is found impracticable after reasonable effort to catch and impound such dog within the said quarantine district in violation of said quarantine or regulation, or to find the owner of a dog so impounded, then any person may kill or cause to be killed such dog and shall not be held liable for damages for such killing. For the purpose of enforcing the provisions of this article the commissioner of agriculture, his appointees and employees shall be considered as peace officers and shall have all the rights and powers of peace officers. (*As amended by chapter 255 of the Laws of 1911.*)

People ex rel. Baumann v. Lyon, 77 Misc. 377; 136 N. Y. Supp. 534.

Fines.

§ 97. **Fines and penalties.** Any person violating, disobeying or disregarding the term of any notice, order or regulation issued or prescribed by the commissioner under this article shall forfeit to

Police to enforce.

Expense incurred by police.

Dogs in violation of quarantine.

Release.

Provisions for killing

Powers of peace officers.

the people of the state the sum of not less than fifty dollars nor more than one hundred dollars for every such violation. Any person violating, disobeying or disregarding the terms of any notice, order or regulation issued or prescribed by the commissioner under this article shall be guilty of a misdemeanor and shall be fined not less than fifty dollars nor more than one hundred dollars for each separate offense or by imprisonment of not less than one month nor more than six months, or by both such fine and imprisonment, except that in the case of rabies he shall be fined not less than ten dollars nor more than one hundred dollars for each offense or by imprisonment of not less than one month *not more than six months, or by both such fine and imprisonment. (As amended by chapter 352 of the Laws of 1909.)

Penalties.

Rabies violation.

People v. Shields, 142 App. Div. 194.

§ 98. **Bureau of veterinary service; chief veterinarian; appraisers.** There is hereby established in the department of agriculture a bureau of veterinary service. The bureau shall be in charge of a chief veterinarian, who shall be an experienced veterinarian appointed by the commissioner of agriculture. He shall receive an annual salary of three thousand dollars and all necessary traveling and other expenses incurred in the performance of his duties. Such chief veterinarian or other veterinarians employed by the commissioner shall have all the powers of an appraiser of condemned animals under this article. The chief veterinarian shall, under the direction of the commissioner of agriculture, have general charge of the enforcement of the provisions of this article, and shall collect and disseminate through farmers' institutes or otherwise, as the commissioner may direct, information and statistics in relation to the diseases of domestic animals, the proper care and sanitation of stables and other buildings used for the stabling of farm animals for the purpose of preventing the existence and spread of infectious and contagious diseases, the methods of feeding, the methods of improving the breed or milking qualities of cattle, and such other matters as the commissioner may direct. All veterinarians in the state shall immediately report to the commissioner of agriculture the existence among animals of any in-

Chief veterinarian.

Appointment.
Compensation.

Duty and powers of veterinarians.

Report of disease.

*So in the original.

fectious or communicable disease coming to their knowledge. The report shall be made in writing and shall include a description of the diseased animal or animals, the name and address of the owner or person in charge of the animal, if known, and a statement as to the location of the animal. No person shall conceal or attempt to conceal any animal suffering from an infectious or communicable disease so that the same shall not come to the knowledge of the commissioner of agriculture. The commissioner of agriculture may appoint and at pleasure remove two confidential agents at salaries not to exceed eighteen hundred dollars, to be fixed by the commissioner, to assist in carrying out the provisions of this article. He may appoint and at pleasure remove one state appraiser of condemned animals, who shall be a person of experience and well acquainted with the value of farm animals; and shall receive an annual salary of fifteen hundred dollars, and all necessary traveling and other expenses incurred in the performance of his duties. The commissioner of agriculture may employ from time to time such additional appraisers of condemned animals as the work of his department may necessitate, who shall receive compensation at the rate of five dollars per diem and all traveling and other expenses necessarily incurred while engaged in the performance of their duties.

§ 99. Appraisal of diseased animals. An appraiser shall determine the value of each animal directed to be slaughtered. Such value shall be the market value of such animal at the time of making the appraisement, but the appraisal value of each bovine animal shall not exceed the sum of one hundred and twenty-five dollars, provided however that the appraised value shall not exceed the sum of seventy-five dollars, except for registered thoroughbred animals, and the appraisal of each equine animal shall not exceed the sum of one hundred and twenty dollars. If the value of the condemned animals determined by the appraiser is not satisfactory to the owner of such animals, the value shall be determined by arbitrators, one to be appointed by the state appraiser and one by the owner of the animals. If such arbitrators are not able to agree as to the value of the animals, a third arbitrator shall be appointed by them. The value determined by such arbitrator

Conceal-
ment of
disease.

Confidential
agents.

State ap-
praiser.

Additional
appraisers.

Appraised
value.

Arbitra-
tion of
value.

shall not exceed the limits established by this article and, after approval by the commissioner of agriculture, shall be final. The arbitrators selected by the owner of the animals shall be paid by the said owner, the other arbitrator or arbitrators shall be paid by the state at a rate of compensation not to exceed five dollars per day and necessary expenses. Such appraiser of condemned animals and the arbitrators appointed under this section may administer oaths to and examine witnesses. (*As amended by chapter 314 of the Laws of 1909 and by chapter 670 of the Laws of 1910.*)

Payment
of arbi-
trators.

Powers of
arbitrators.

§ 100. **Certificate of appraisal.** The appraiser shall execute and deliver to the owner of the condemned animals a certificate verified by him stating the appraised value of such animals; if such value was determined by arbitrators, there shall be attached to such certificate a statement of the value so determined, signed and verified by at least two of the arbitrators. The form and contents of such certificates shall be prescribed by the commissioner of agriculture.

Certificate.

Statement
of value.

Form and
contents.

§ 101. **Post-mortem examination of animals.** All animals suspected of being tuberculous or glandered, and killed therefor, shall be examined by a medical or veterinary practitioner designated by the commissioner for the purpose of determining whether or not such disease existed in such animals. There shall be attached to the certificate of appraisal, a statement of the result of such examination, describing the animals found to be tuberculous or glandered and those which were found not to be tuberculous or glandered. The form of such statement shall be prescribed by the commissioner of agriculture. Such statement shall be verified by the veterinary or medical practitioner making the examination. (*As amended by chapter 314 of the Laws of 1909.*)

Post-
mortem ex-
amination.

Statement
of result.

Form of
statement.

Verifica-
tion of
statement.

§ 102. **Compensation of owners of animals destroyed.** The actual appraised value at the time they are killed of all animals killed under the provisions of this article, which shall be found upon a post-mortem examination not to have had the disease for which they were killed, unless the same were killed on account of

Payment
when not
diseased.

the violation of quarantine regulations, shall be paid to the owners of such animals. If such animals are found, upon post-mortem examination, to have been suffering from glanders then they shall be paid for in the manner following: If an animal has glanders, not manifest by clinical symptoms, the owner thereof shall be paid eighty per centum of the appraised value. If the animal has glanders showing clinical symptoms, the owner thereof shall be paid therefor fifty per centum of the appraised value. If such animals are found upon post-mortem examination to have been suffering from tuberculosis, then they shall be paid for in the manner following, to wit: If an animal has localized tuberculosis, the owner thereof shall be paid eighty per centum of the appraised value. If the animal has generalized tuberculosis, the owner thereof shall be paid therefor fifty per centum of the appraised value, but no animal slaughtered under the provisions of this article shall be paid for as herein provided, unless the said animals shall have been within the state for a period of at least six months if suffering from tuberculosis or twelve months if suffering from glanders. If the meat of the slaughtered bovine animal shall be passed for use as food, under official regulations, the commissioner of agriculture is hereby authorized to sell the same and the proceeds from the sale of the meat, hide and other marketable parts of the said animal shall be paid into the state treasury. For each and every day the owner or custodian of the animals condemned is obliged to keep them, in excess of seven days from the date of the condemnation, he shall be allowed and paid the sum of twenty-five cents per day per head. The certificate of appraisal, and the statement of the result of the post-mortem examination, shall be presented by the owner or his legal representatives or assigns, to the commissioner of agriculture. The commissioner of agriculture shall issue his order for the amount due as shown by such certificate and statement, after he has found them to be correct, which shall be paid by the state treasurer on the warrant of the comptroller out of moneys appropriated therefor. No compensation shall be made to any person who has wilfully concealed the existence of disease among his animals or upon his premises, or who in any way by act or by wilful neglect has contributed to spread the disease sought to be

Payment
when
diseased.

Glanders.

Tubercu-
losis.

Disposal of
meat.

Payment
for keeping
condemned
animals.

Refusal of
com-
pensation.

suppressed or prevented, nor for any animal which upon a post-mortem examination is found to have the disease on account of which it was slaughtered or any dangerously contagious or infectious disease that would warrant the destruction of such animal, except as herein provided. (*As amended by chapter 314 of the Laws of 1909.*)

§ 103. **Expenses.** All expenses incurred by the commissioner in carrying out the provisions of this article and in performing the duties herein devolved upon him shall be audited by the comptroller as extraordinary expenses of the department of agriculture, and paid out of any moneys in the treasury appropriated for such purposes.

(Sections 104 and 105 *repealed by chapter 232 of the Laws of 1909.*)

§ 106. **Shipping, slaughtering and selling veal for food.** No person shall slaughter or expose for sale, or sell any calf or carcass of the same or any part thereof, unless it is in good healthy condition. No person shall sell or expose for sale any such calf or carcass of the same or any part thereof, except the hide, unless it was, if killed, at least four weeks of age at the time of killing. No person or persons shall bring or cause to be brought into any city, town or village any calf or carcass of the same or any part thereof for the purpose of selling, offering or exposing the same for sale, unless it is in a good healthy condition, and no person or persons shall bring any such calf or carcass of the same or any part thereof except the hide into any city, town or village for the purpose of selling, offering or exposing the same for sale, unless the calf is four weeks of age, or, if killed, was four weeks of age at the time of killing, provided, however, that the provisions of this section shall not apply to any calf or carcass of the same or any part thereof, which is slaughtered, sold, offered or exposed for sale, for any other purpose than food. Any person or persons exposing for sale, selling or shipping any calf or carcass of the same will be presumed to be so exposing, selling or shipping the said calf or carcass of the same for food. Any person or persons shipping any calf for the purpose of being raised, if the said

Sale of calves.

Shipment of calves.

Presumption

Method of shipping.

calf is under four weeks of age, shall ship it in a crate, unless said calf is accompanied by its dam. Any person shipping calves under four weeks of age for fertilizer purposes must slaughter the said calves before so shipping. Any person or persons duly authorized by the commissioner of agriculture may examine any calf or veal offered or exposed for sale or kept with any stock of goods apparently exposed for sale, and if such calf is under four weeks of age, or the veal is from a calf killed under four weeks of age, or from a calf in an unhealthy condition when killed, he may seize the same and cause it to be destroyed and disposed of in such manner as to make it impossible to be thereafter used for food.

(As amended by chapter 561 of the Laws of 1910.)

People v. Bishopp, 106 App. Div. 266, 94 N. Y. Supp. 773, 128 N. Y. St. Rep. 773; People v. Dennis, 114 N. Y. Supp. 7; People v. Sayre (not reported); People v. Wright, 103 App. Div. 218, statute presumptively constitutional; Williams v. Rivenburg, 129 N. Y. Supp. 473.

§ 107. Shipping veal. It shall be unlawful for any corporation, partnership, person or persons to ship to or from any part of this state any carcass or carcasses of a calf or calves or any part of such carcass except the hide, unless they shall attach to every carcass or part thereof so shipped, in a conspicuous place, a tag, that shall stay thereon during such transportation, stating the name or names of the person or persons who raised the calf, the name of the shipper, the points of shipping and the destination and the age of the calf.

§ 108. Receiving veal for shipment by common carriers. No railroad company, express company, steamboat company or other common carrier, shall carry or receive for transportation any carcass or carcasses of calves, or any part of the same except the hide, unless the said carcass or carcasses or parts thereof shall be tagged as herein provided.

Calves for
fertilizer
purposes.

Seizure of
calves
and veal.

Penalties.

ARTICLE 6

Prevention of Fraud in Sale of Paris Green and Other Substances

Section 140. State manufacturer and the dealer in original packages to file certificate with commissioner of agriculture.

141. Certificate to be given by the commissioner of agriculture to state manufacturer and dealer in original packages.

142. Composition of paris green or analogous products.

143. Paris green, arsenate of lead, sulphur, lime sulphides, miscible combinations of mineral and vegetable oils, sulphate of copper, Bordeaux mixture, or any insecticide or fungicide or essential ingredient thereof to be analyzed.

144. Definitions.

§ 140. **State manufacturer and the dealer in original packages to file certificate with commissioner of agriculture.** Statement by manufacturer and dealer. It shall be the duty of each and every manufacturer of paris green, arsenate of lead, sulphur, lime sulphides, miscible combinations of mineral or vegetable oils, sulphate of copper, Bordeaux mixture, or any insecticide or fungicide or essential ingredient thereof used for the control of insects or fungus diseases or any other purpose within this state, and of every dealer in original packages of paris green, arsenate of lead, sulphur, lime sulphides, miscible combinations of mineral or vegetable oils, sulphate of copper, Bordeaux mixture, or any insecticide or fungicide or essential ingredient thereof manufactured outside of this state before the said paris green, arsenate of lead, sulphur, lime sulphides, miscible combinations of mineral or vegetable oils, sulphate of copper, Bordeaux mixture, or any insecticide or fungicide or essential ingredient thereof is offered or exposed for sale or sold within this state, to submit to the commissioner of agriculture a written or printed statement setting forth: first, the brands of paris green, arsenate of lead, sulphur, lime sulphides, miscible combinations of mineral or vegetable oils, sulphate of copper, Bordeaux mixture, or any insecticide or fungicide or essential ingredient thereof, to be sold, the number of pounds contained in each package in which it is put Brands.

upon the market for sale, the name or names of the manufacturers and the place of manufacturing the same; second, the statement shall set forth so near as may be the percentages and chemical compositions of all essential substances or ingredients of said insecticides or fungicides or combinations of the same contained in said commodities. All packages of preparations containing arsenic free or in combination shall bear a statement giving in plain print the percentage of arsenious oxide or its equivalent soluble or insoluble in distilled water, and the statement so furnished shall be considered as constituting a guaranty to the purchaser of the contents of every package. Each and every package of paris green, arsenate of lead, sulphur, lime sulphides, miscible combinations of mineral or vegetable oils, sulphate of copper, Bordeaux mixture, or any insecticide or fungicide or essential ingredient thereof sold, offered or exposed for sale shall bear a label upon which shall be a statement showing all the facts as set forth in the statement filed with the commissioner of agriculture as provided herein and the said commissioner shall designate the size and character of the printing thereon.

Composition.

Statement on package.

Label.

§ 141. **Certificate to be given by the commissioner of agriculture to state manufacturer and dealer in original packages.** Every purchaser of paris green, arsenate of lead, sulphur, lime sulphides, miscible combinations of mineral or vegetable oils, sulphate of copper, Bordeaux mixture, or any insecticide or fungicide or essential ingredient thereof, in original packages, which is manufactured outside of this state, who intends to sell or expose the same for sale, and every manufacturer of paris green, arsenate of lead, sulphur, lime sulphides, miscible combinations of mineral or vegetable oils, sulphate of copper, Bordeaux mixture, or any insecticide or fungicide or essential ingredient thereof, within this state shall, after filing the statement above provided for, with the commissioner of agriculture, receive from the said commissioner of agriculture, a certificate stating that he has complied with the foregoing statement, which certificate shall be furnished without any charge therefor; said certificate when furnished shall authorize the party receiving the same to deal in this state in paris green, arsenate of lead, sulphur, lime sulphides, miscible combinations of mineral and vegetable oils, sulphate of copper, Bordeaux

Certificate to manufacturer and dealers.

Authority conferred by certificate.

mixture, or any insecticide or fungicide or essential ingredient thereof. Any person who fails to file the statement aforesaid shall not be entitled to such certificate and shall not be entitled to deal in such articles or commodities within this state; nothing in this section shall be construed as applying to retail dealers who are selling only the goods manufactured by any person or persons, firm, association or corporation holding the certificate herein provided for from the commissioner of agriculture.

Certificate
necessary.

Retailers.

§ 142. **Composition of paris green or analogous products.** Paris green, or any product analogous to it, when sold, offered or exposed for sale, as such, in this state, shall contain at least fifty per centum of arsenious oxide.

§ 143. **Paris green, arsenate of lead, sulphur, lime sulphides, miscible combinations of mineral and vegetable oils, sulphate of copper, Bordeaux mixture, or any insecticide or fungicide or essential ingredient thereof to be analyzed.** The commissioner of agriculture shall cause to have taken samples of the different brands of paris green, arsenate of lead, sulphur, lime sulphides, miscible combinations of mineral and vegetable oils, sulphate of copper, Bordeaux mixture, or any insecticide or fungicide or essential ingredient thereof, and submit the same to the director of the New York state agricultural experiment station, who shall analyze or cause to be analyzed such samples so delivered to him, and shall report the result of the analysis forthwith to the commissioner of agriculture.

Samples.

Analysis of
samples.

§ 144. **Definitions.** The term "insecticide" as used in this article shall include all substances or mixtures of substances intended to be used for destroying, repelling or mitigating any and all insects which may infest vegetation, man or other animal, or be present in any environment whatsoever. The term "fungicide" as used in this article shall include any substance or mixture of substances intended to be used for destroying, repelling or mitigating any or all fungi or fungus diseases affecting any form of vegetation or vegetable products or existing in any environment whatsoever, providing that nothing herein shall be construed as contravening the provisions of the national pure food and drug law.

Insecticide.

Fungicide.

* So in the original.

ARTICLE 7

Sale and Analysis of Concentrated Commercial Feeding Stuffs

Section 160. Term “concentrated commercial feeding stuffs” defined.

- 161. Statements to be attached to packages; contents; analysis.
- 162. Statements to be filed with commissioner of agriculture; to be accompanied by sample and affidavit when requested.
- 163. License fee.
- 164. Commissioner of agriculture to take samples for analysis; analysis to be made by director of experiment station.
- 165. Sale of adulterated meal or ground grains.

§ 160. Term “concentrated commercial feeding stuffs” defined.

Definition.

The term “concentrated commercial feeding stuffs” as used in this article, shall include linseed meals, cotton seed meals, pea meals, bean meals, peanut meals, cocoanut meals, gluten meals, gluten feeds, maize feeds, starch feeds, sugar feeds, dried distiller’s grains, dried brewer’s grains, malt sprouts, except as hereinafter provided, hominy feeds, cerealine feeds, rice meals, dried beet refuse, oat feeds, corn and oat chops, corn and cob meal, ground beef or fish scraps, meat meals, meat and bone meals mixed, dried blood, mixed feeds, clover meals, alfalfa feeds and meals, compounded feeds, condimental stock and poultry foods, proprietary or trade-marked stock and poultry foods, and all other materials of similar nature; but shall not include hays and straws, the whole seeds nor the unmixed meals made directly from the entire grains of wheat, rye, barley, oats, corn, buckwheat and broom corn. Neither shall it include wheat, rye and buckwheat brans or middlings, not mixed with other substances, but sold separately, as distinct articles of commerce, nor pure grains ground together, nor corn meal and wheat bran mixed together, when sold as such by the manufacturer at retail, nor malt sprouts, when sold as such by the maltster at retail, nor wheat bran and middlings mixed together not mixed with any other substances and known in the trade as

Exceptions.

“mixed feed,” nor ground or cracked bone not mixed with any other substance, nor shall it include poultry foods consisting of whole or whole and cracked grains and grit mixed together when all the ingredients may be identified by the naked eye. (*As amended by chapter 277 of the Laws of 1912.*)

§ 161. **Statements to be attached to packages; contents; analysis.** Statement.
No manufacturer, firm, association, corporation or person shall sell, offer or expose for sale or for distribution in this state, any concentrated commercial feeding stuffs used for feeding live stock unless such concentrated commercial feeding stuffs shall be accompanied by or shall have affixed to each and every package in a conspicuous place on the outside thereof, a plainly printed statement which shall certify as follows:

1. The net weight of the contents of the package, except in the Weight.
case of malt sprouts sold in packages containing uneven weights.
2. The name, brand or trade mark. Name.
3. The name and principal address of the manufacturer or Manu-
facturer.
person responsible for the placing of the commodity upon the market.
4. Its composition expressed in the following terms: Com-
position.
 - a. The minimum per centum of crude protein.
 - b. The minimum per centum of crude fat.
 - c. The maximum per centum of crude fibre, provided that the per centum of crude fibre may be omitted if it does not exceed five per centum.
 - d. If a compounded feed, the name of each ingredient contained therein.
 - e. If artificially colored, the name of the material used for such purpose.

If any such concentrated commercial feeding stuffs be sold, Bulk
goods.
offered or exposed for sale in bulk, such printed statement shall accompany every car or lot. Any such feeding stuffs purchased in bulk and later sacked or bagged for purposes of sale shall have tags attached giving the information as provided herein before being sold, offered or exposed for sale. Whenever any feeding stuffs are sold at retail in bulk or in packages belonging to the purchaser, the seller upon request of the purchaser shall

furnish the said purchaser the information contained in the certified statement provided herein. That portion of the statement required by this section relating to the quality of feeding stuffs shall be known and recognized as the guaranteed analysis. (*As amended by chapter 314 of the Laws of 1911.*)

§ 162. **Statements to be filed with commissioner of agriculture; to be accompanied by sample and affidavit when requested.** Before any manufacturer, firm, association, corporation or person shall sell, offer or expose for sale in this state any concentrated commercial feeding stuffs, he or they shall, for each and every brand of concentrated commercial feeding stuff, file annually prior to January first of the calendar year in which such commodity is to be sold, offered or exposed for sale with the commissioner of agriculture a certified copy of the statement, with the exception of the net weight of the contents of the package, specified in section one hundred and sixty-one, said certified copy to be accompanied, when the said commissioner shall so request, by a sealed glass jar or bottle containing at least one pound of the feeding stuff to be sold or offered for sale, and the company or person furnishing said sample shall thereupon make affidavit that said sample corresponds to the feeding stuff which it represents, in the per centum of crude protein, crude fat, crude fibre, name of each ingredient contained therein, if a compounded feed, and the name of any artificial coloring material used. (*As amended by chapter 314 of the Laws of 1911.*)

§ 163. **License fee.** Every manufacturer, importer, agent or seller of any concentrated commercial feeding stuffs, shall pay annually prior to January first of the calendar year in which such commodity is to be sold, offered or exposed for sale to the treasurer of the state of New York a license fee of twenty-five dollars for each and every brand to be sold or offered or exposed for sale. Whenever a manufacturer, importer, agent or seller of any concentrated commercial feeding stuffs desires at any time to sell such material and has not complied with the requirements of the statute he shall before selling, offering or exposing the same for sale, comply with the requirements as herein provided.

Said treasurer shall in each case at once certify to the commissioner of agriculture the payment of such license fee. Each manufacturer, importer or person who has complied with the provisions of this article shall be entitled to receive a certificate from the commissioner of agriculture setting forth said facts. Such certificate shall expire on the thirty-first day of December of the calendar year in which it was issued, but no such certificate shall be issued for the sale of a brand of concentrated commercial feeding stuff under a brand or trade name which is misleading or deceptive or which tends to mislead or deceive as to the constituents or materials of which it is composed. Any such certificate so issued may be cancelled by the commissioner of agriculture when it is shown that any statement upon which it was issued is false or misleading. Whenever the manufacturer, importer or shipper of concentrated commercial feeding stuffs shall have filed the statement required by section one hundred and sixty-one of this article and paid the license fee as prescribed in this section, no agent or seller of such manufacturer, importer or shipper shall be required to file such statement or pay such fee. (*As amended by chapter 317 of the Laws of 1909.*)

Certificate from commissioner.

Expiration of certificate.

Cancellation of certificate.

Exemption from fee.

§ 164. **Commissioner of agriculture to take samples for analysis; analysis to be made by director of experiment station.** The commissioner of agriculture shall at least once in each year transmit to the New York agricultural experiment station for analysis at least one sample to be taken in the manner hereinafter prescribed, of the different concentrated commercial feeding stuffs sold or offered for sale under the provisions of this article. The said commissioner of agriculture or his duly authorized representative in taking samples shall take them in duplicate in the presence of at least one witness, and in the presence of such witness shall seal such samples and shall at the time of taking tender, and if accepted, deliver to the person apparently in charge one of such samples; the other sample the commissioner of agriculture shall cause to be analyzed. The director of said experiment station shall continue to analyze or cause to be analyzed such samples of concentrated commercial feeding stuffs taken under the provisions of this article as shall be submitted to him for that purpose

Sample for analysis.

Taking of sample.

Analysis of sample.

Chemists.

Publica-
tion of
result.

by the commissioner of agriculture and shall report such analyses to the commissioner of agriculture, and for this purpose the New York agricultural experiment station may continue to employ chemists and incur such expenses as may be necessary to comply with the requirements of this article. The result of the analysis of the sample or samples so procured, together with such additional information as circumstances advise, shall be published in reports or bulletins from time to time.

Labeling
adulter-
ated feed.

§ 165. **Sale of adulterated meal or ground grains.** No person shall adulterate any kind of meal or ground grain or other cattle food with milling or manufacturing offals, or any substance whatever, for the purpose of sale, unless the true composition, mixture or adulteration thereof is plainly marked or indicated upon the package containing the same or in which it is offered for sale; no person shall sell or offer for sale any meal or ground grain or other cattle food which has been so adulterated unless the true composition, mixture or adulteration is plainly marked or indicated upon the package containing the same, or in which it is offered for sale. (*As amended by chapter 317 of the Laws of 1909.*)

ARTICLE 8

Sale, Adulteration or Misbranding of Food and Food Products

Section 200. Prohibition as to adulterated or misbranded food.

201. Definition of adulterated or misbranded food.

§ 200. Prohibition as to adulterated or misbranded food. No person or persons, firm, association or corporation shall within this state, manufacture, produce, sell, offer or expose for sale any article of food which is adulterated or misbranded within the meaning of this article. The term " food " as used herein shall include all articles used for food, confectionery or condiments by man, whether simple, mixed or compound.

Food.

§ 201. Definition of adulterated or misbranded food. In the case of confectionery, an article shall be deemed to be adulterated if it contain terra alba, barytes, talc, chrome yellow, or other mineral substances or poisonous colors or flavors, or other ingredients deleterious or detrimental to health. In the case of food an article shall be deemed to be adulterated:

Adulterated confectionery.

Adulterated food.

1. If any substance or substances has or have been mixed or packed with it so as to reduce or lower or injuriously affect its quality or strength, so that such product, when offered for sale, shall deceive or tend to deceive the purchaser.

Quality or strength.

2. If any substance or substances has or have been substituted wholly or in part for the article, so that the product, when sold or offered for sale, shall deceive or tend to deceive the purchaser.

Substitution.

3. If any valuable constituent of the article has been wholly or in part abstracted, so that the product, when sold or offered for sale, shall deceive or tend to deceive the purchaser.

Abstraction.

4. If it contains any added poisonous ingredient or any ingredient which may render such article injurious to the health of the person consuming it.

Injurious ingredient.

5. If it consists in whole or in part of a filthy, decomposed or putrid animal or vegetable substance, or any portion of an animal unfit for food, whether manufactured or not, or if it is the product of a diseased animal, or one that has died otherwise than by slaughter.

Unfit for food.

Alcohol. 6. If it contains methyl or wood alcohol, in any of its forms, or any methylated preparation made from it.

Misbranded food. An article of food shall be deemed to be misbranded:

Imitation. 1. If it be an imitation of or offered for sale under the distinctive name of another article.

Concealment. 2. If it be mixed, colored, powdered or stained in a manner whereby damage or inferiority is concealed, so that such product, when sold or offered for sale, shall deceive or tend to deceive the purchaser.

False statement. 3. If the package containing it or its label shall bear any statement regarding the ingredients or the substances contained therein, which statement shall be false or misleading in any particular, or if the same is falsely branded as to the state or territory in which it is manufactured or produced: provided, that an article of food which does not contain any added poisonous or deleterious ingredients shall not be deemed to be adulterated or misbranded in the following cases:

Exceptions. First. In the case of mixtures or compounds which may be now or from time to time hereafter known as articles of food, under their own distinctive names, and not included in definition first of misbranded articles of food in this section.

Second. In the case of articles labeled, branded or tagged so as to plainly indicate that they are mixtures, compounds, combinations, imitations or blends: provided, that the same shall be labeled, branded or tagged so as to show the character and constituents thereof: and provided further, that nothing in this article shall be construed as requiring or compelling proprietors or manufacturers of proprietary foods which contain no unwholesome added ingredients to disclose their trade formulas, except in so far as the provisions of this article may require to secure freedom from adulteration or imitation.

People v. James Butler Inc., 134 App. Div. 151, Second Division; People v. Green, Supreme Court, Third Division; People v. Johnson, 221 U. S. 488; People v. Lewis, 138 App. Div. 673; People v. J. Lewis, 131 App. Div. 336; People v. Luke, 122 App. Div. 64; People v. Finch, 74 Misc. 575, 131 N. Y. Supp. 1039.

ARTICLE 9

Sale and Analysis of Commercial Fertilizers

Section 220. Statements to be attached to packages.

221. Deficiency from guaranteed analysis, under certain conditions, not to be considered as violations.

222. Statement filed with commissioner of agriculture; license fees.

223. Presence of inert nitrogenous matter to be stated.

224. Commissioner of agriculture to take samples for analysis; analysis to be made by director of experiment station.

§ 220. **Statements to be attached to packages.** No manufacturer, firm, association, corporation or person shall sell, offer or expose for sale in this state any commercial fertilizer or any material to be used as a fertilizer, the selling price of which exceeds five dollars per ton, unless such commercial fertilizer or material to be used as a fertilizer shall be accompanied by or shall have affixed to each and every package in a conspicuous place on the outside thereof, a plainly printed statement which shall certify as follows: Statement.

1. The number of pounds in the package. Quantity.

2. The name, brand or trade mark under which it is to be sold, and in the case of agricultural lime its particular form. Name.

3. The name and principal address of the manufacturer or person responsible for the placing of the commodity upon the market. Manufacturer.

4. The minimum per centum of each of the following constituents which may be contained therein: Composition.

(a) Nitrogen.

(b) Available phosphoric acid, except that in cases of undissolved bone, basic slag phosphate, wood ashes, untreated phosphate rock, garbage tankage and pulverized natural manures, the minimum per centum of total phosphoric acid may be substituted therefor.

(c) Potash soluble in distilled water.

(d) In the case of agricultural lime, the minimum per centum of calcium oxide. If any commercial fertilizer or material to be used as a fertilizer, the selling price of which exceeds five dollars

Bulk lots. per ton, be sold, offered or exposed for sale in bulk such printed statement shall accompany every lot and parcel so sold, offered or exposed for sale. That portion of the statement required by this section, relating to the quality of commercial fertilizer or material to be used as a fertilizer, shall be known and recognized as the **Guaranteed analysis.** (As amended by chapter 435 of the Laws of 1910.)

False statement. § 221. **Deficiency from guaranteed analysis, under certain conditions, not to be considered as violations.** It shall be a violation of the provisions of this article if the statement required by section two hundred and twenty of this article shall be false in regard to the number of pounds of fertilizer in the package sold, offered or exposed for sale, or in the name, brand or trade mark under which the fertilizer is sold, or in the name and address of the manufacturer of the fertilizer. It shall also be a violation of the provisions of this article if any commercial fertilizer or material to be used as a fertilizer shall contain a smaller percentage of nitrogen, phosphoric acid, potash or calcium oxide than is certified in said statement to be contained therein, when such deficiency shall be greater than ten per centum of any one of such constituents unless there be a monetary equivalent in excesses in other guaranteed constituents as provided herein; provided such deficiency does not exceed twenty per centum of such guarantee in any one constituent. The basis of values of such constituents necessary in making such computations shall be determined by the commissioner of agriculture. (As amended by chapter 435 of the Laws of 1910.)

Margin of deficiency.

Basis of values.

§ 222. **Statement filed with commissioner of agriculture; license fees.** Before any manufacturer, firm, association, corporation or person shall sell, offer or expose for sale in this state any commercial fertilizer or material to be used as a fertilizer, the selling price of which exceeds five dollars per ton, he or they shall, for each and every brand of commercial fertilizer or material to be used as a fertilizer, file annually, prior to January first of the calendar year, in which such commodity is to be sold, offered or exposed for sale, with the commissioner of agriculture a certified

Filing of statement.

copy of the statement prescribed in section two hundred and twenty of this article. Every manufacturer, firm, association, corporation or seller of any commercial fertilizer or material to be used as a fertilizer the selling price of which exceeds five dollars per ton, shall pay annually prior to January first of the calendar year in which such commodity is to be sold, offered or exposed for sale, to the treasurer of the state of New York a license fee of twenty dollars for each and every brand to be sold or offered or exposed for sale. Whenever a manufacturer, firm, association, corporation or seller of any commercial fertilizer or material to be used as a fertilizer, the selling price of which exceeds five dollars per ton, desires at any time to sell such commercial fertilizer or such material and has not complied with the requirements of the statute, he or they shall before selling, offering or exposing the same for sale, comply with the requirements as herein provided. Said treasurer shall in each case at once certify to the commissioner of agriculture the payment of such license fee. Each manufacturer, firm, association, corporation or seller who has complied with the provisions of this article shall be entitled to receive a certificate from the commissioner of agriculture setting forth said facts. Such certificate shall expire on the thirty-first day of December of the calendar year for which it was issued. Whenever a manufacturer, firm, association, corporation or person shall have filed the statement and paid the license fee as prescribed in this section, upon any given brand, no agent or seller of such manufacturer, firm, association, corporation or person shall be required to file such statement or pay such fee upon said brand. For the purposes of this article, commercial fertilizers or materials to be used as a fertilizer, shall be considered as distinct and separate brands when differing either in guaranteed analysis, name, brand or trade mark or in any other method of marking. (*As amended by chapter 435 of the Laws of 1910.*)

Payment of
license fee.

Certificate
from com-
missioner.

Exemption
from
license fee.

Separate
brands.

§ 223. **Presence of inert nitrogenous matter to be stated.** No manufacturer, firm, association, corporation or person shall sell, offer or expose for sale in this state leather or its products or other inert nitrogenous material in any form, as a commercial

fertilizer or material to be used as a fertilizer or as an ingredient of any fertilizer, unless an explicit statement of the facts shall be affixed to every package in a conspicuous place on the outside thereof and shall accompany every parcel or lot which may be sold, offered or exposed for sale in bulk. (*As amended by chapter 435 of the Laws of 1910.*)

§ 224. Commissioner of agriculture to take samples for analysis; analysis to be made by director of experiment station. The commissioner of agriculture shall at least once in each year transmit

Transmis-
sion of
sample.

to the New York agricultural experiment station for analysis at least one sample, to be taken in the manner hereinafter prescribed, of the different brands of commercial fertilizers and materials to be used as fertilizers the selling price of which exceed five dollars per ton, which are or may be sold, offered or exposed for sale under the provisions of this article. The said commissioner of agriculture or his duly authorized representatives in taking samples shall take them in triplicate in the presence of at least one witness and in the presence of such witness shall seal such samples and shall at the time of taking tender, and if accepted, deliver to the person apparently in charge one of such samples, one of the other samples the commissioner of agriculture shall cause to be analyzed. When samples are taken from fertilizers in bags, a tube shall be used and it shall be inserted at one end of the bag and shall pass substantially the entire length of the bag, so as to take a core of the material being sampled from substantially the entire length of the bag. Samples thus taken from individual bags shall be thoroughly mixed and the official samples be taken from the mixture so drawn. Samples of fertilizer taken as herein provided shall be taken from at least five per centum of the separate original packages in the lot for the mixture from which the official samples shall be taken. No action shall be maintained for a violation of the provisions of this article based upon an analysis of samples taken otherwise than as herein provided or taken from less than five separate original packages. The director of said experiment station shall continue to analyze or cause to be analyzed such samples of commercial fertilizers and materials to be used as fertilizers taken under the provisions of this article as

Taking
sample. of

shall be submitted to him for that purpose by the commissioner of agriculture and shall report such analysis to the commissioner of agriculture and for this purpose the New York agricultural experiment station may continue to employ chemists and incur such expenses as may be necessary to comply with the requirements of this article. The result of the analysis of the sample or samples so procured, together with such additional information as circumstances advise, shall be published in reports or bulletins from time to time. (*As amended by chapter 435 of the Laws of 1910.*)

Report of
analysis.

Chemists.

Publication
of result.

ARTICLE 10

Turpentine, Linseed or Flaxseed Oil

- Section 240. Adulteration and sale; notification of purchaser; package and invoices to be marked.
241. Violation a misdemeanor; fine.
242. Powers and duties of commissioner of agriculture.
243. Penalty; action to recover.

Turpen-
tine.

Labeling
adulterated
turpentine.

§ 240. **Adulteration and sale; notification of purchaser; package and invoices to be marked.** No person, firm or corporation shall manufacture, mix for sale, sell or offer for sale under the name of turpentine, spirits of turpentine, or wood turpentine or any compounding of the word turpentine, or under any name or device illustrating or suggesting turpentine or spirits of turpentine, any article which is not wholly distilled or derived from resin, crude turpentine gum, or scrapings from pine trees, and unmixed and unadulterated with oil, benzine or any other substance of any kind whatever, unless the package containing the same shall be stenciled or marked, with legible black letters in the English language not less than two inches high and one inch in width, “adulterated spirits of turpentine.” Nor shall any person, firm or corporation sell or deliver such adulterated spirits of turpentine without informing the purchaser at the time of sale that the article is not pure spirits of turpentine, and the invoice shall accordingly read, “adulterated spirits of turpentine.” Every container in which such mixed or adulterated spirits of turpentine is contained shall, in addition to the labeling before mentioned, be marked or stenciled in legible black letters in the English language, with the percentage of adulterant or adulterants which are contained in such mixture.

Linseed oil.

No person, firm or corporation shall manufacture or mix for sale, offer or expose for sale, or sell under the name of raw linseed oil, or any compounding of the name raw linseed oil, or under any name or device illustrating or suggesting raw linseed oil, any article which is not wholly the product of commercially pure linseed or flaxseed.

Nor shall any person, firm or corporation manufacture or mix for sale, offer or expose for sale, or sell under the name of boiled

linseed oil, any article unless the oil from which said article is made be wholly the product of commercially pure linseed or flaxseed, and unless the same has been heated to at least two hundred and twenty-five degrees Fahrenheit. Nor shall any person, firm or corporation sell such adulterated linseed oil, unless the package be plainly marked in legible black letters, two inches high and one inch in width, "adulterated linseed oil," or without informing the purchaser at the time of sale, that same is not pure raw linseed, boiled linseed or flaxseed oil, and the invoice shall accordingly read "adulterated linseed oil."

Labeling
adulterated
linseed oil.

Nor shall any person, firm or corporation engage in the sale of such adulterated turpentine, linseed or flaxseed oil, in original packages or other than original package, unless there are posted conspicuously in the room where such goods are sold, signs bearing the words "adulterated turpentine," or "adulterated linseed or flaxseed oil, sold here," in legible letters in the English language at least two inches in length and one inch in width, letters to be in black on white background. Nothing herein contained shall be construed as prohibiting the manufacture or sale of any such compound or imitation providing the container shall be plainly marked, and the purchaser notified and the invoice reading accordingly and the requirements of this section otherwise observed, as aforesaid. (*As amended by chapter 816 of the Laws of 1911.*)

Notice to
purchaser.

Sale of
imitations.

§ 241. **Violation a misdemeanor; fine.** Violation of any of the provisions of this article shall be a misdemeanor, punishable by a fine of not less than fifty dollars or more than five hundred dollars or by imprisonment for not more than one year, or by both such fine and imprisonment.

§ 242. **Powers and duties of commissioner of agriculture.** It shall be the duty of the commissioner of agriculture to enforce the provisions of this article. The said commissioner and his assistants, experts and chemists, and official agents appointed by him, shall have access, ingress and egress to and from all places of business and buildings, freight platforms, transportation boats, and all wagons and vehicles where turpentine or linseed or flaxseed oil is kept for sale or stored or in transit. They shall have

Enforcement of
law.

Access to
buildings,
etc.

Inspection.

power and authority to open any tank, barrel, can or other vessel containing or supposed to contain turpentine or linseed or flaxseed oil and inspect the contents thereof, and take samples therefrom for analysis. (*As amended by chapter 816 of the Laws of 1911.*)

Penalty.

§ 243. **Penalty; action to recover.** Any person, firm or corporation who shall violate any of the provisions of this article shall, in addition to the fine or imprisonment previously described, for each offense forfeit and pay a fixed penalty of one hundred dollars. Such penalty shall be recovered, with costs, in any court of the state having jurisdiction thereof, in an action to be prosecuted in the name of the people, by the commissioner of agriculture.

Action to
recover.

ARTICLE 11.

Apples; Pears; Peaches; Quinces

Section 260. *Evaporated apples.

261. *Moisture in evaporated apples.

262. Sale of apples, pears and peaches.

263. Barrels; apples, pears and quinces.

§ 260. **Sale of other than standard evaporated apples.** No person shall buy for resale, sell, expose or offer for sale as and for evaporated apples any evaporated apples intended to be used for food, or for consumption by any person, other than standard evaporated apples.

§ 261. **Definition of standard evaporated apples.** Evaporated apples containing not more than twenty-seven per centum of water or fluids as determined by drying for four hours at the temperature of boiling water shall be considered standard evaporated apples for the purposes of this article.

§ 262. **Sale of apples, pears and peaches.** No person or persons shall sell, offer or expose for sale apples, pears or peaches as and for New York state grown apples, pears or peaches if they were not grown or produced within the state of New York; nor shall they brand or label the package or barrel containing such apples, pears or peaches as New York state apples, pears or peaches if they were not grown or produced within the state of New York. Any person or persons packing or repacking or causing apples or pears to be packed or repacked, to be sold upon the markets, shall pack or repack or cause them to be packed or repacked in such a manner that each separate package or barrel shall be packed substantially uniform without intent to deceive the purchaser. Any person, persons or corporation buying from a grower apples or pears which are packed in packages or barrels, marked or labeled with the name of the grower, who causes such apples or pears to be repacked in the same packages or barrels or who uses the same packages or barrels for the packing of other fruit or apples or pears, shall erase from such package or barrel

Sale as
New York
fruit.

Packing
and re-
packing.

* So in the original.

the name of the grower or packer first or originally placed thereon.

Facing. But the facing of such package or barrel is not prohibited by this section. The standard grade for apples which shall be shipped or delivered for shipment or which shall be sold or offered for sale shall be: Apples of one variety, which are well-grown specimens, hand-picked, of good color for the variety, normal shape, practically free from insect and fungus injury, bruises, and other defects, except such as are necessarily caused in the operation of packing, or apples of one variety which are not more than ten per centum below the foregoing specifications, are standard grade size A, if the minimum size of apples is two and one-half inches in transverse diameter; or are standard grade size B, if the minimum size of the apples is two and one-fourth inches in transverse diameter; or are standard grade size C, if the minimum size of the apples is two inches in transverse diameter. No person, firm or association shall misbrand apples as to their standard grade or otherwise. Apples in packages shall be deemed to be misbranded within the meaning of this act if the package bears any statement, design or device indicating that the apples contained therein are standard grade "size A," "size B," or "size C," as the case may be, and the apples do not conform to the requirements prescribed by this act for apples of the particular grade. If the package bears any statement, design or device indicating that the apples contained therein are standard grade "size A," "size B," or "size C," as the case may be, and the package fails to bear also a statement of the name of the variety, the name of the locality where grown, and the name of the packer or the person by whose authority the apples were packed. (*As amended by chapter 511 of the Laws of 1911.*)

Standard grade.

Misbranding.

§ 263. (Repealed by chapter 81 of the Laws of 1912.)

ARTICLE 12**Agricultural Statistics**

Section 280. Collection and dissemination of statistics.

281. Information to be furnished by supervisors.

§ 280. **Collection and dissemination of statistics.** The commissioner of agriculture may collect and disseminate such information relative to agriculture, and agricultural labor within the state, as he may deem wise for the purpose of promoting agricultural production within this state.

§ 281. **Information to be furnished by supervisors.** Supervisors of the different towns and wards in this state shall furnish to the commissioner of agriculture upon request from him, upon blanks to be furnished by the said commissioner, such information as may be in their possession or may be obtained by them relative to agriculture, agricultural production and agricultural labor within their respective towns or wards. Such information shall be furnished to said commissioner within thirty days from the time it is asked for. The expense incurred by the several supervisors in furnishing such information shall be a town charge to be paid in the manner now provided by law for the payment of services and disbursements by such supervisors.

Information
from super-
visors.

Time limit.

Expense.

ARTICLE 12-A.

Sale of Farm Produce on Commission.

Section 282. Definitions.

- 283. Sale of farm produce on commission; license therefor.
- 284. Bond.
- 285. Power of commissioner to investigate.
- 286. Granting and revoking licenses.
- 287. Certiorari to review.
- 288. Report of sale to consignor.
- 289. Offenses.

Commis-
sion mer-
chant.

Public
auction.

Farm
produce.

Prohibi-
tion.

Applica-
tion.

§ 282. Definitions as used in this article. 1. The term commission merchant shall include every person, firm, exchange, association and corporation licensed under this article to receive, sell or offer for sale on commission within this state any kind of farm produce; except where such farm produce is sold for consumption and not for resale. This article shall not apply to the sale of farm produce at public auction by a duly licensed and bonded auctioneer, acting as the agent of another to whom such farm produce shall have been consigned; nor shall this article apply to seeds sold at retail.

2. The term farm produce shall include all agricultural, horticultural, vegetable and fruit products of the soil, and meats, poultry, eggs, dairy products, nuts and honey, but shall not include timber products, floricultural products, tea or coffee. (*As added by chapter 457 of the Laws of 1913.*)

§ 283. Sale of farm produce on commission; license therefor. On and after August first, nineteen hundred and thirteen, no person, firm, exchange, association or corporation, shall receive, sell or offer for sale on commission within this state any kind of farm produce, without a license as provided in this article. Every person, firm, exchange, association and corporation in this state receiving farm produce for sale on commission shall, annually on or before June first, file an application with the commissioner of agriculture for a license to do a commission business in farm

produce. Such applicant shall state the kind or kinds of farm produce which the applicant proposes to handle, the full name of the person, firm, exchange, association or corporation applying for such a license and if the applicant be a firm, exchange, corporation or association, the full name of each member of the firm, or the names of the officers of the exchange, association or corporation, and the name of the local agent of the exchange or association and the city, town or village and street number at which the business is to be conducted. Such applicant shall further satisfy the commissioner of agriculture of his or its character, responsibility and good faith in seeking to carry on a commission business. The commissioner of agriculture shall thereupon issue to such applicant, on payment of ten dollars and the execution and delivery of a bond as hereinafter provided, a license entitling the applicant to conduct the business of receiving and selling farm produce on commission at the place named in the application until the first day of July next following. (*As added by chapter 457 of the Laws of 1913.*)

Kinds of
farm
produce.
Name.

Name of
local
agent.

Address.

Character.

Issuing
license
fee.

§ 284. **Bond.** Before any such license shall be issued every applicant shall execute and deliver to the commissioner of agriculture a fidelity bond with satisfactory sureties in the sum of three thousand dollars to secure the honest accounting to the consignor of the monies received by such commission merchant from the sale of the farm produce sold on commission, and the commissioner of agriculture may bring an action in any court of competent jurisdiction in the county in which is situated the place of business of the licensee, against the principal and sureties for the recovery of any monies so received and not honestly accounted for. (*As added by chapter 457 of the Laws of 1913.*)

Amount.

Action
on bond.
County.

§ 285. **Power of the commissioner of agriculture to investigate.** The commissioner of agriculture or his assistants shall have power to investigate, upon the verified complaint of an interested person, the record of any person, firm, exchange, corporation or association applying for a license, or any transaction involving the solicitation, receipt, sale or attempted sale of farm produce on a commission basis, the failure to make proper and

Investiga-
tion upon
verified
complaint.

Failure to
account.

False
statement.Examina-
tion of
documents.Failure
to obtain
settlement.Explan-
ation.

Time.

Service
of com-
plaint.

Time.

Hearing.

Decision.

Action.

Refusal
and revo-
cation of
license.

Judgment.

true accounts and settlements at prompt and regular intervals, the making of false statements as to condition, quality or quantity of goods received, or while in storage, the making of false statements as to market conditions, with intent to deceive, or the failure to make payment for goods received or other alleged injurious transactions; and for such purpose may examine at the place of business of the licensee, that portion of the ledgers, books of account, memoranda or other documents, relating to the transactions involved, of any commission merchant, and may take testimony therein under oath. When a consignor of farm produce fails to obtain satisfactory settlement in any transaction, after having notified the consignee, a certified complaint may be filed, at the expiration of ten days after such notification, with the commissioner of agriculture. The commissioner of agriculture shall attempt to secure an explanation or adjustment, failing this, within seven days he shall cause a copy thereof, together with a notice of a time and place for a hearing on such complaint, to be served personally, or by mail, upon such commission merchant. Such service shall be made at least seven days before the hearing, which shall be held in the city, village or township in which is situated the place of business of the licensee. At the time and place appointed for such hearing, the commissioner or his assistants shall hear the parties to such complaint, shall have power to administer an oath, and shall enter in the office of the commissioner of agriculture at Albany a decision either dismissing such complaint or specifying the facts which he deems established on such hearing, and in case such facts are established as cause him to revoke such license, he shall bring an action on the bond within sixty days of the filing of such decision. (*As added by chapter 457 of the Laws of 1913.*)

§ 286. **Granting and revoking licenses.** The commissioner of agriculture may decline to grant a license or may revoke a license already granted where he is satisfied of the existence of the following cases or any of them: 1. Where a money judgment has been entered against such commission merchant and upon which execution has been returned unsatisfied.

2. Where false charges have been imposed for handling or services rendered. False charges.
3. Where there has been a failure to account promptly and properly or to make settlements, with intent to defraud. Failure to account.
4. Where there have been false statements as to condition, quality or quantity of goods received or held for sale on commission when the same might be known on reasonable inspection. False statement as to condition of goods.
5. Where there have been false or misleading statement or statements as to market conditions with intent to deceive. False statement as to market.
6. Where there has been a combination or combinations to fix prices. Combinations.
7. Where the commission merchant directly or indirectly purchases the goods for his own account without prior authority therefor or without notifying the consignor thereof. (*As added by chapter 457 of the Laws of 1913.*) Purchase by commission merchant.

§ 287. **Certiorari to review.** The action of the commissioner of agriculture in refusing to grant a license, or in revoking a license granted under this article, shall be subject to review by a writ of certiorari, and if such proceedings are begun, until the final determination of the proceedings and all appeals therefrom, the license of such commission merchant shall be deemed to be in full force and effect, provided the fee for such license shall have been paid and a bond given as herein required. (*As added by chapter 457 of the Laws of 1913.*) License to remain in force during proceeding.

§ 288. **Report of sale to consignor.** Every commission merchant shall, upon the receipt of farm produce and as he handles and disposes of the same, make a record thereof, specifying the name and address of the consignor, the date of receipt, the kind and the quantity of such produce, the amount of goods sold, the selling price thereof and the items of expense connected therewith, and this record together with payment in settlement for said shipment shall be mailed to the consignor within forty-eight hours unless otherwise agreed. (*As added by chapter 457 of the Laws of 1913.*) Record.

§ 289. **Offenses.** Any person, firm, exchange, association or corporation who shall receive or offer to receive, sell or offer to

Dealing without license.	sell on commission within this state any kind of farm produce without a license except as in this chapter permitted and any person who being a commission merchant in farm produce shall (a) impose false charges for handling or services in connection with farm produce, or (b) fails to account for such farm produce promptly and properly and to make settlements therefor, with intent to defraud, or (c) shall make false or misleading statement or statements as to market conditions with intent to deceive, or (d) enter into any combination or combinations to fix prices, or (e) directly or indirectly purchases for his or its own account, goods received by him or it upon consignment without prior authority therefor from the consignor, or shall fail to promptly notify the consignor of such purchase on his or its own account, or (f) any person handling, shipping or selling farm produce who shall make false statements as to grade, condition, markings, quality or quantity of goods shipped, or packed in any manner, with intent to deceive, shall be guilty of a misdemeanor. (<i>As added by chapter 457 of the Laws of 1913.</i>)
False charges.	
Failure to account.	
False statement.	
Combination.	
Purchase by commission merchant.	
Miscellaneous.	
Misdemeanor.	

ARTICLE 13

State Fair

Section 290. Property in town of Geddes, Onondaga county, New York.

291. State fair commission.

292. State fair.

293. Assistants and employees.

294. Receipts and disbursements.

§ 290. **Property in town of Geddes, Onondaga county, New York.** Conveyance of property.

The conveyance to the state by the New York state agricultural society of its property in the town of Geddes, Onondaga county, New York, by deed dated July twenty-eighth, eighteen hundred and ninety-nine, and recorded in the office of the comptroller, is hereby accepted, ratified and confirmed. Such property and any other property hereafter acquired by the state for state fair purposes shall be under the management and control of the state fair commission as hereinafter provided, and they may, from time to time, make rules and provide for the care, preservation and improvement thereof. Power of commission.

§ 291. **State fair commission.** The state fair commission shall consist of seven members, of whom the lieutenant-governor and the commissioner of agriculture shall ex officio constitute two. The remaining five members of such commission shall be appointed by the governor, by and with the advice and consent of the senate as hereinafter provided. The terms of the five appointive members of such commission in office when this section as hereby amended takes effect shall expire on June first, nineteen hundred and ten. On or before June first, nineteen hundred and ten, the governor shall, by and with the advice and consent of the senate, appoint five members of such commission to succeed those whose terms expire as hereinabove provided, for terms of one, two, three, four and five years, respectively, so that the term of one member of such commission shall expire on June first of each year. A successor to a member of such commission shall be appointed, in like manner, annually for a full term of five years. The governor Members of commission. Appointment. Superintendent.

shall designate one of the members of such commission, who, in addition to his duties as commissioner, shall act as superintendent of the fair grounds and buildings for and during his term as commissioner, his acts as such superintendent to be under the direction of the commission. Such member shall devote his entire time to the duties of his office. The lieutenant-governor shall be the presiding officer of the commission. The member of such commission designated by the governor to have charge of the fair grounds and buildings shall receive an annual salary of five thousand five hundred dollars, the other appointed members of the commission shall receive an annual salary of three thousand dollars, and all the members of such commission shall receive their actual and necessary expenses in the discharge of their official duties, to be paid on the certificate of the commissioner of agriculture and the audit and warrant of the comptroller. (*As amended by chapter 366 of the Laws of 1910.*)

Presiding officer.

Salaries.

Expenses.

Time of holding fair.

Racing privileges.

Fair rules.

Free admission.

§ 292. **State fair.** It shall be the duty of the said commission to hold a state fair at such times as they may deem proper, except that said state fair shall not be held on the first Monday in September, known as Labor day, and between January first and February fifteenth in each calendar year to publish the time of holding said fair in such year. It shall not be lawful for any corporation, association or individual to hold or conduct any trotting or pacing race or races during the week in which the state fair is held, except upon half-mile tracks, and except at the fairs held by agricultural societies which have received moneys from the state, and no corporation, association or individual holding such races during said week shall be entitled to any of the benefits conferred by article twenty of the membership corporations law, or by any general or special law. Such commission may make, alter, suspend or repeal needed rules relating to such fair, including the times and duration thereof, the terms and conditions of entries and admissions, exhibits, sale of privileges, payments of premiums, and any other matters which they may deem proper in connection with such fair. They shall furnish to each person who, on the seventeenth day of January, nineteen hundred, was a life member of the state agricultural society, a free admis-

sion to the fair ground during the fair of each year during the life of such member.

§ 293. **Assistants and employees.** The state fair commission may appoint such assistants and employees as they may deem necessary. They may prescribe their duties and fix their compensation. Such assistants and employees shall be subject to removal at the pleasure of such commission. (*As amended by chapter 366 of the Laws of 1910.*)

§ 294. **Receipts and disbursements.** The commission shall receive all moneys payable to the state on account of said fair, and make all disbursements therefrom and also from any appropriation made for that purpose by the legislature as may be needed, from time to time, in carrying on the work of the commission. The provisions of section thirty-seven of the state finance law requiring that money received for or on behalf of the state shall be paid monthly into the state treasury shall not apply to the state fair commission, and such commission may pay from the race and other entry fees, gate admissions and other receipts of such fair such expenses as shall be necessary for the proper conduct of the fair and the purposes of the commission. On or before the first day of January of each year the commission shall pay to the state treasurer any balance remaining in their hands received in connection with the state fair, and at the same time file with the comptroller an itemized verified report showing all receipts and disbursements for state fair purposes since the last report, together with the vouchers therefor approved by said commission.

Receipts.

Disbursements.

Financial report.

ARTICLE 14**Miscellaneous Provisions**

- Section 300. The prevention of disease among bees.
301. Defining honey.
302. Relative to selling a commodity in imitation or semblance of honey.
303. Duties of the commissioner.
304. The prevention of disease in trees, shrubs, plants and vines and the extirpation of insect pests that infest the same.
305. Action to be taken by the commissioner of agriculture relative to trees or other plants affected with or by contagious or infectious disease or fungous growth or infested with insect pest or pests and providing for issuing certificates relative to trees or other plants apparently free from such diseases and pests, regulating the use thereof, defining nursery stock, providing for fumigation, forbidding the bringing into the state such diseases or pests.
306. The New York agricultural experiment station.
307. The director of the New York agricultural experiment station to publish bulletins.
- 307-a. Additional copies of reports of experiment station.
308. The state weather bureau.
309. Institutions designated to receive United States moneys.
310. Receipt and apportionment of moneys for the promotion of agriculture.
311. Distribution of moneys appropriated for certain agricultural societies.
312. Annual report to the commissioner of agriculture and state society.
313. Lease of grounds of agricultural societies and corporations.
314. Manufacture and sale of imitation maple sugar and syrup prohibited.

Section 315. Branding and labeling of maple sugar and syrup mixtures.

316. Association of farmers; powers of.

317. County judge may appoint policemen or constables.

318. Registration of rural residences.

§ 300. **The prevention of disease among bees.** No person shall keep in his apiary any colony of bees affected with a contagious malady known as foul brood or black brood; and every beekeeper when he becomes aware of the existence of either of such diseases among his bees, shall immediately notify the commissioner of agriculture of the existence of such disease.

§ 301. **Defining honey.** The terms “honey,” “liquid or extracted honey,” “strained honey,” or “pure honey,” as used in this article, shall mean the nectar of flowers that has been transformed by, and is the natural product of the honey-bee, taken from the honeycomb and marketed in a liquid, candied or granulated condition.

§ 302. **Relative to selling a commodity in imitation or semblance of honey.** No person or persons shall sell, keep for sale, expose or offer for sale, any article or product in imitation or semblance of honey branded as “honey,” “liquid or extracted honey,” “strained honey” or “pure honey” which is not pure honey. No person or persons, firm, association, company or corporation, shall manufacture, sell, expose or offer for sale, any compound or mixture branded or labeled as and for honey which shall be made up of honey mixed with any other substance or ingredient. There may be printed on the package containing such compound or mixture a statement giving the ingredients of which it is made; if honey is one of such ingredients it shall be so stated in the same size type as are the other ingredients, but it shall not be sold, exposed for sale, or offered for sale as honey; nor shall such compound or mixture be branded or labeled with the word “honey” in any form other than as herein provided; nor shall any product in semblance of honey, whether a mixture or not, be sold, exposed or offered for sale as honey, or branded or labeled with the word “honey,” unless such article is pure honey.

Examina-
tion of
apiaries.

Instruction.

Destruction
of bees.

Access.

Exposure
prohibited.

Refusal.

Penalties.

§ 303. **Duties of the commissioner.** The commissioner of agriculture shall immediately upon receiving notice of the existence of foul brood or black brood among the bees in any locality, send some competent person or persons to examine the apiary or apiaries reported to him as being affected, and all the other apiaries in the immediate locality of the apiary or apiaries so reported; if foul brood or black brood is found to exist in them, the person or persons so sent by the commissioner of agriculture shall give the owners or caretakers of the diseased apiary or apiaries full instructions how to treat said cases. The commissioner of agriculture shall cause said apiary or apiaries to be visited from time to time as he may deem best and if, after proper treatment, the said bees shall not be cured of the diseases known as foul brood or black brood then he may cause the same to be destroyed in such manner as may be necessary to prevent the spread of the said diseases. For the purpose of enforcing this article, the commissioner of agriculture, his agents, employees, appointees or counsel, shall have access, ingress and egress to all places where bees or honey or appliances used in apiaries may be, which it is believed are in any way affected with the said disease of foul brood or black brood or where it is believed any commodity is offered or exposed for sale in violation of the provisions of this article. No owner or caretaker of a diseased apiary, honey or appliances shall sell, barter or give away any bees, honey or appliances from said diseased apiary, which shall expose other bees to the danger of said diseases, nor refuse to allow the said commissioner of agriculture, or the person or persons appointed by him to inspect said apiary, honey or appliances, and do such things as the said commissioner of agriculture or the person or persons appointed by him shall deem necessary for the eradication of said diseases. Any person who disregards or violates any of the provisions of this section is guilty of a misdemeanor and shall be punished by a fine of not less than thirty dollars nor more than one hundred dollars, or by imprisonment in the county jail for not less than one month nor more than two months, or by both fine and imprisonment.

§ 304. **The prevention of disease in trees, shrubs, plants and vines and the extirpation of insect pests that infest the same.** No

person shall knowingly or willfully keep any plum, peach, almond, apricot, nectarine or other trees affected with the contagious disease known as yellows. No person shall knowingly or willfully keep any peach tree affected with the disease known as little peach. Nor shall any person knowingly or willfully keep any trees, plants or vines affected or infected with the contagious disease or fungus known as black knot or with any other dangerously injurious fungous growth or any tree, shrub, plant or vine infested or infected with or by the San Jose scale or other insect pest or fungous disease dangerously injurious to or destructive of the trees, shrubs or other plants; every such tree, shrub, plant or vine shall be a public nuisance, and as such shall be abated and no damage shall be awarded for entering upon premises upon which there are trees, shrubs, plants or vines which may be infected with yellows, little peach or black knot or infested with San Jose scale or other insect pest, for the purpose of legally inspecting the same, nor shall any damage be awarded for the destruction by the commissioner of agriculture or his duly authorized agents, or representatives of such trees, shrubs, plants or vines if necessary or proper to suppress such disease or pest, if done in accordance with the provisions of this article, except as otherwise herein provided. Every person, when he becomes aware of the existence of such disease, fungous growth or insect pest in any tree, shrub, plant or vine, owned by him, shall forthwith report the same to the commissioner of agriculture at Albany, New York, and the said commissioner shall take such action as the law provides. If in the judgment of said commissioner of agriculture or the person or persons representing him, the trees, shrubs, plants, vines or their products, boxes, containers, or packing material so infected, infested or diseased should be destroyed or there is reasonable ground to believe that such trees, shrubs, plants, vines or their products, containers or packing material are or may be so infected, infested or diseased that they should be destroyed, then such destruction shall be carried on and completed under the supervision of the commissioner of agriculture or the person or persons duly appointed by him and authorized so to do, without unnecessary delay, but the owner of the trees, shrubs, plants, vines or their products, boxes, containers or packing material shall be

Yellows.

Little
peach.Black
knot.
Other
growth.
San Jose
scale.
Other
disease.No damage
awarded.Report of
existence of
infested
stock.Destruction
of infested
stock.Notice to
owners of
infested
stock.

Delivery of
notice.

Statement
in notice.

Time limit.

Treatment
of infested
stock.

Failure to
comply.

Appeal to
commis-
sion.

Assistants
for treat-
ment or
destruction.

notified immediately upon its being determined that such trees, shrubs, plants, vines or their products, boxes, containers or packing material should be destroyed, by a notice in writing signed by said commissioner or the person or persons representing him, which said notice in writing shall be delivered in person to the owner of such trees, shrubs, plants, vines or their products, containers or packing material or left at the usual place of residence of such owner, or if such owner be not a resident of the town, by leaving such notice with the person in charge of the premises, trees, shrubs, plants, vines or their products, boxes, containers or packing material or in whose possession they may be; such notice shall contain a brief statement of the facts found to exist whereby it is deemed necessary or proper to destroy such trees, shrubs, plants, vines or their products, boxes, containers or packing material and shall call attention to the law under which it is proposed to destroy them, and the owner shall within ten days from the date upon which such notice shall have been received, or such shorter time as the commissioner of agriculture may designate, remove and burn all such diseased or infested trees, shrubs, plants, vines or their products, boxes, containers or packing material. If, however, in the judgment of the commissioner of agriculture, any trees, shrubs, plants, vines or their products, boxes, containers or packing material infected with any such disease or infested with dangerously injurious insects or fungous growth can be successfully treated with remedies, he may direct such treatment to be carried out by the owner under the direction of the commissioner's agent or agents; any person refusing or failing to comply with the directions of the commissioner of agriculture or his duly authorized agents in carrying on the work of extirpating dangerously injurious insect pests and fungous or other diseases shall be guilty of a misdemeanor. In case of objections to the findings of the inspector or agent of the commissioner of agriculture, an appeal shall be made to the commissioner of agriculture, whose decision shall be final. An appeal must be taken within three days from the service of said notice and shall act as a stay of proceedings until it is heard and decided. When the commissioner of agriculture or the person or persons appointed by him shall determine when any tree or trees, shrubs, plants, vines or

their products, boxes, containers or packing material must be treated or destroyed forthwith, he may employ all necessary assistants for that purpose, and such person or persons, agent or agents, employee or employees, may enter upon any or all premises in any city or town necessary for the purposes of such treatment, removal or destruction. The commissioner of agriculture shall ascertain the value of all boxes or containers destroyed and all trees, shrubs, plants, vines or their products destroyed on the ground that there was reasonable cause to believe they were or might be infected, infested or diseased as provided herein by having an agent of the department appraise the same. If the owner thereof is not satisfied with the value as fixed in such appraisal, then two arbitrators shall be appointed, one by the owner and one by the commissioner of agriculture or his duly authorized representative, and the value fixed by such arbitrators shall be final when duly approved by the commissioner of agriculture. But if such arbitrators fail to agree, then each arbitrator shall make a report to the commissioner of agriculture setting forth the values as determined by him and the said commissioner shall thereafter fix a value upon the articles so appraised. If the owner is not satisfied with the value so fixed, he may take an appeal therefrom to the court of claims, which court is hereby authorized to pass upon the questions involved and determine the amount due the said owner. The commissioner of agriculture shall thereafter make to the comptroller of the state of New York a detailed statement in which he shall set forth the boxes and containers thus destroyed and the trees, shrubs, and plants destroyed on the ground of reasonable cause to believe that they were or might have been infected, infested or diseased and the value thereof determined as provided herein. The comptroller shall thereafter draw his warrant on the treasurer for the amount certified by the commissioner of agriculture as the value thereof and the treasurer shall pay to the owner or owners of the said boxes, containers, trees, shrubs, plants, vines or their products so destroyed the value thereof from any money in the treasury specifically appropriated therefor. The provisions of this section shall apply to all boxes, containers, trees, shrubs, plants, vines or their products hereafter or heretofore destroyed, except as to such boxes, containers, trees, shrubs, plants,

Appraisal
of value.Arbitration
of value.Determination
of value.Appeal to
the court
of claims.Statement
to comp-
troller.

Payment.

Exceptions.

vines or their products as were brought into the state illegally, and such as are known to be infected or infested with such disease, fungous growth or pest. (*As amended by chapter 798 of the Laws of 1911.*)

§ 305. Action to be taken by the commissioner of agriculture relative to trees or other plants affected with or by contagious or infectious disease or fungous growth or infested with insect pest or pests and providing for issuing certificates relative to trees or other plants apparently free from such diseases and pests, regulating the use thereof, defining nursery stock, providing for fumigation, forbidding the bringing into the state such diseases or pests. When the commissioner of agriculture knows or has reason to believe that any such disease, fungous growth or insect pest exists, or that there is good reason to believe that it exists, or danger is justly apprehended of its introduction into any town or city in the state, or that any dangerously injurious insect pest or fungous growth exists within this state, and has reason to believe that danger may be justly apprehended from its existence, he shall forthwith send some competent person and such agent or agents as he may deem necessary to assist in extirpating said pest or pests, disease or diseases, and the said commissioner of agriculture is hereby authorized and empowered to take such steps and do whatever may be deemed necessary to so control or prevent the spread or extirpate such pest or pests, disease or diseases. The said commissioner is hereby empowered to issue such orders and notices as he may deem necessary or proper for the purposes herein relative to such diseased nursery stock or relative to any trees, shrubs, plants, vines or their products, boxes, containers or packing material concerning which he has reasonable cause to believe are or may be infected or infested with any such disease or pest. Any person violating the provisions of any order or notice so issued by him shall be guilty of a misdemeanor. He shall cause an examination to be made at least once each year, prior to September first, of each and every nursery or other place where trees, shrubs, plants or vines, commonly known as nursery stock, are grown for sale, for the purpose of ascertaining whether the trees, shrubs, plants or vines therein kept or propa-

Prevention
of pests.

Notices for
control.

Misde-
meanor.
Inspection
of nurser-
ies.

gated for sale are infected with any such contagious disease or diseases or infested with such pest or pests. If after such examination it is found that the said trees, shrubs, plants or vines so examined are free in all respects from any such contagious or infectious disease or diseases, dangerously injurious pest or pests, the said commissioner or his duly authorized agent or other person designated to make such examination shall thereupon issue to the owner or proprietor of the said stock thus examined a certificate setting forth the fact that the stock so examined is apparently free from any and all such disease or diseases, pest or pests. Should any nurseryman, agent, dealer or broker, distribute or deliver within the state, trees, vines, shrubs, plants, buds or cuttings, commonly known as nursery stock, and which are subject to the attacks of insects and diseases above provided for, unless he has in his possession a copy of said certificate, dated within a year thereof, deface or destroy such certificate, or wrongfully be in possession of such certificate, he shall be guilty of a misdemeanor. All nursery stock consigned for shipment or shipped by freight, express or other means of transportation shall be accompanied by a copy of said certificate attached to each car, box, bale, bundle or package, but no nursery stock shall be sold or shipped under the certificate issued as provided herein that is not raised in the nursery for or to which the said certificate was issued until such stock has been duly examined as provided herein and found to be apparently free from any dangerously injurious insect pest or disease. Any person consigning for shipment or shipping nursery stock as above without such certificate attached or a facsimile thereof or wrongfully using such certificate or a facsimile thereof shall be guilty of a misdemeanor. All custom house brokers bringing into or causing to be brought into this state any nursery stock shall file with the commissioner of agriculture on or before October first each year the name of the person, firm, association or corporation engaged in or intending to engage in such business, together with the business address of such person, firm, association or corporation. All transportation companies, custom house brokers or other persons importing or bringing nursery stock into this state shall immediately, upon receiving such consignment, notify the commissioner of agriculture of the fact that such consignment

Certificate
of inspection.

Use of certificate.

Misdemeanor.

Use of certificate.

Misdemeanor.

Information
from custom
house
brokers.

Notice
from transportation
companies
and custom
house
brokers.

is in their possession or is en route to some point within the state and give the name of the consignor and consignee, and the points of shipment and of destination of such consignment, and the name of the transportation company bringing such stock and the route or routes over which it was brought and shall make such further report relative to such shipments as the commissioner of agriculture may from time to time require. Any person bringing trees or other plants into this state or receiving such trees or plants from outside the state shall before unpacking the same within the state apply to and receive from the commissioner of agriculture a permit so to do; the commissioner of agriculture shall, upon being satisfied that said trees or plants so desired to be inspected are free from any dangerously injurious insect pest, disease or fungous growth, issue a certificate permitting such person to unpack such trees or plants. No person shall knowingly or willfully bring into this state or unpack within the state gypsy or brown-tail moth or other insect pests or caterpillar, larvae, pupae or eggs of the same except for scientific purposes and then only upon the written consent and approval of the commissioner of agriculture. All trees, plants, shrubs, buds or cuttings, commonly called nursery stock, grown in any nursery in this state, in which San Jose scale has been found within two years of the date of the dissemination of said nursery stock or grown in said nursery within one-half mile of where said scale was found, must be fumigated with hydrocyanic acid gas, in such manner as may be directed by the commissioner of agriculture of this state. Such fumigation must be done by the grower of such stock before planting, dissemination or re-shipment, except such trees, shrubs, plants, buds or cuttings grown in this state as are planted by the grower or propagator for himself, or such as from its nature or state of growth would be exempt; in such cases the said commissioner shall declare such trees, shrubs, plants, buds or cuttings free from such treatment. Should any nursery stock purchased within one year be found infested with San Jose scale on the premises of any nurseryman, it shall not be considered such an infestation as to require the fumigation of other stock not so purchased. The words "nursery stock" wherever used in this article shall apply to and include all trees, shrubs, plants, buds, scions, cuttings and vines grown in a nursery and

Permit to unpack stock from outside state.

Introduc-tion of in-sect pests.

Fumiga-tion.

Exceptions.

Nursery stock de-fined.

willows grown for baskets or cuttings or for nursery or other commercial purposes. The provisions of this and the preceding section shall not apply to florists' greenhouse plants, flowers or cuttings commonly known as greenhouse stock, and no certificate shall be required for stock so shipped into the state that its sale and shipment become either interstate commerce traffic or commerce with foreign nations. (*As amended by chapter 798 of the Laws of 1911.*)

Exceptions.

§ 306. **The New York agricultural experiment station.** The institution known as the New York agricultural experiment station, located in the city of Geneva, for the purpose of promoting agriculture in its various branches by scientific investigation and experiment, shall continue under the control and management of a board of trustees. Such board of trustees shall be known as the board of control of the New York agricultural experiment station and shall consist of nine members, except as hereinafter provided. The governor and commissioner of agriculture shall be members of the board by virtue of their offices. The governor shall appoint the other seven members of such board, whose term of office shall be three years, provided, however, that the present members of the board of control shall continue in office until the expiration of the terms to which they were appointed. Such board of control, of which five members shall constitute a quorum, shall hold an annual meeting and such other meetings from time to time as they may deem necessary and shall annually elect a president from their own number, and appoint a secretary and treasurer, to hold their offices during the pleasure of the board. Such board of control shall have general management of the station and shall appoint a director to have oversight and management of the experiments and investigations and other scientific and expert work which shall be deemed necessary to accomplish the objects of said institution, and such board may employ competent and suitable chemists and other experts and persons necessary for carrying on the work of the station, and shall fix the compensation of all persons connected with the work of said station. Said station shall, besides conducting experiments and investigations for the promotion of agricultural science, perform and report to the com-

Location.

Control.

Ex-officio members.
Appoint-
ment of
board.

Quorum.

Meetings.

Power of
board.

Director.

Chemists
etc.

Analyses.	missioner of agriculture such analyses and other expert scientific work as said commissioner may request as necessary for the ad-
Salaries and ex-penses.	ministration of the provisions of this chapter and the salaries and other expenses incurred by reason of such analyses and other expert scientific service shall be paid from fund provided to said station for the express purpose of aiding in enforcing the provisions of this chapter. Said board of control shall publish or cause to be
Bulletins and reports.	published, from time to time, bulletins and reports giving the results of the experiments and investigations conducted by said station for the promotion of agriculture in its various branches, together with such other information as may promote the pur-
Expendi-tures.	poses and welfare of said institution. Such board shall have direction of the expenditure of all moneys appropriated to said station; the director shall annually on or before the fifteenth day of December make a full report to the board of the work accom-
Report of director.	plished by said station, which report, together with a statement of the receipts and expenditures for the year ending the thirtieth day of September then next preceding, and such other statements as may seem desirable, the board shall transmit to the commis-
Compensa-tion of board.	sioner of agriculture on or before the first day of January next succeeding, and said report shall constitute part of the annual report of the commissioner of agriculture. No member of said board shall receive any compensation for his services as such, but shall be paid his necessary traveling expenses and those expenses incurred by him by an actual attendance upon the meetings of
Rules and regulations.	such board. The board shall make such rules and regulations as may from time to time become necessary to carry out the objects of the station.

§ 307. The director of the New York agricultural experiment station to publish bulletins. The director of the New York agricultural experiment station is hereby authorized and empowered to publish from time to time bulletins giving information as to results of analyses made by him or under his authority or direction at the New York agricultural experiment station, situate in the city of Geneva and state of New York, of any commodity or substance analyzed in pursuance of or under the provisions of the statutes of this state. He may also publish bulletins containing

Results of analyses.

results of analyses made of such substances or commodities, which analyses were made prior to the passage of this section and which have not heretofore been published.

§ 307-a. **Additional copies of reports of experiment station.** In addition to the number of copies otherwise required by law, the commissioner of agriculture may, with the approval of the governor, cause to be printed by the state printer such number of copies of any report of the New York Agricultural Experiment Station at Geneva, heretofore or hereafter made, as he deems sufficient to meet the public demand therefor as provided by this section. The expense of printing such copies shall be paid for out of the appropriation for the legislative printing, at the prevailing rates, upon the audit of the comptroller. Such copies shall be delivered to the commissioner of agriculture and sold by him to the public at the actual cost thereof as determined by the audit of the comptroller. (*As added by chapter 458 of the Laws of 1913.*)

Expense of printing.

Sale.

§ 308. **The state weather bureau.** The state meteorological bureau and weather service, shall hereafter be known as the state weather bureau, and shall be under the control and management of the commissioner of agriculture. Such commissioner may appoint the director of such bureau but such director shall not receive any compensation for his services. The commissioner may continue the central office and station for meteorological observation and experiment upon the grounds of Cornell university, and shall, if practicable, establish and supervise one or more volunteer weather stations in each congressional district of the state, in co-operation with the chief of the United States weather bureau, for the purpose of increasing the usefulness of the weather service of the state and of the United States. The sum of four thousand five hundred dollars, or so much thereof as the commissioner deems necessary, shall be annually appropriated to be paid to the commissioner by the treasurer, upon the warrant of the comptroller, issued upon the vouchers of the commissioner, for necessary clerical services at such central office, for printing and distributing reports of the results and operations of such bureau, in such

Control.

Director.

Volunteer stations.

Appropriations.

manner as shall be most serviceable to the people of the state, and for the purchase, preservation and repair of proper and necessary instruments for the work of such bureau and for the reasonably necessary traveling and incidental expenses of such commissioner and director in the performance of their duties, and for such other expenses as such commissioner shall deem necessary for the efficient administration of such bureau.

§ 309. **Institutions designated to receive United States moneys.** The Cornell university and the agricultural experiment station at Geneva established by the laws of the state are hereby designated as the institutions within this state, entitled to receive such portion as the legislature shall determine of the benefits of the act of the congress of the United States, approved March second, eighteen hundred and eighty-seven, entitled "An act to establish agricultural experiment stations in connection with the colleges established in the several states, under the provisions of an act approved July second, eighteen hundred and sixty-two, and of the acts supplementary thereto." Such benefits of such acts which this state is authorized thereby to apply to any college, institution or agricultural experiment station within this state, are applied to the agricultural experiment station established under the direction of Cornell university and the agricultural experiment station at Geneva, and this state consents that such appropriation, money or benefits to or for the use of this state, or of any institution within this state, payable under or in pursuance of such act of congress, shall be paid nine-tenths thereof to the treasurer of Cornell university, the officer designated to receive the same, and one-tenth thereof to the officers of the agricultural experiment station at Geneva designated to receive the same, to be expended as provided in such act of congress. Such experiment station shall, annually, on or before the first day of December, make, to the commissioner of agriculture, a full and detailed report of its operations, including a statement of its receipts and expenditures for the year ending with the thirtieth day of September then next preceeding. Such experiment station may, with the consent and approval of the commissioner of agriculture, appoint horticultural experts to assist such experiment station, in the fifth judicial department,

Agricultural
experiment
stations.

Division of
funds.

Annual
report to
commis-
sioner.

Horticultural
ex-
perts.

in conducting investigations and experiments in horticulture; in discovering and remedying the diseases of plants, vines and fruit trees; in ascertaining the best means of fertilizing vineyard, fruit and garden plantations, and of making orchards, vineyards and gardens prolific; in disseminating horticultural knowledge by means of lectures or otherwise; and in preparing and printing, for free distribution, the results of such investigations and experiments, and such other information as may be deemed desirable and profitable in promoting the horticultural interests of the state. Such experts may be removed by such experiment station, in its discretion, and may be paid for their services such sums as it may deem reasonable and proper, and as shall be approved by the commissioner of agriculture. All of such work by such experiment station and by such experts shall be under the general supervision and direction of the commissioner of agriculture. The treasurer of this state shall keep the account of all moneys hereafter received by him in pursuance of such act of congress, in a separate fund, to the credit of the Cornell university and the agricultural experiment station at Geneva, in the proportion stated in this section, and shall pay all such moneys immediately upon receipt thereof by him to the officers respectively designated therein to receive the same, upon the warrant of the comptroller, issued upon the order of the trustees of Cornell university and the board of control of the agricultural experiment station at Geneva, in pursuance of said act of congress, which said moneys are hereby appropriated for the purposes herein stated.

Dissemination of horticultural knowledge.

Salary of experts.

Supervision of commissioner.

Treasurer's account.

Transfer of funds.

§ 310. **Receipt and apportionment of moneys for the promotion of agriculture.** All the moneys already appropriated, or hereafter appropriated, for the promotion of agriculture in any one year, and all the revenues which have been, or shall be received by the comptroller, and all the moneys received by him from the tax collected from racing associations pursuant to article twenty of the membership corporations law, or hereafter otherwise collected from racing associations, corporations or clubs, shall constitute a fund, which shall be annually disbursed on behalf of the state for the promotion of agriculture and domestic arts, for the promotion of education along agricultural lines and

Fund.

Distribution.

Basis of distribution.

Limit of distribution.

for the promotion of the improvement of the breeding of cattle, sheep, horses and other domestic animals at the various fairs throughout the state, and shall be apportioned and distributed as hereinafter prescribed, among all the various county agricultural societies, the American institute of the city of New York, and among the other various town or other agricultural societies, or agricultural fair associations, or agricultural expositions, or agricultural clubs which have received moneys from the state and disbursed moneys for the state for such promotion, during either one of the three years, nineteen hundred and five, nineteen hundred and six, or nineteen hundred and seven, under and by virtue of section eighty-eight or eighty-nine of the agricultural law as it then existed. Such apportionment and distribution shall be made by the commissioner of agriculture in the following manner: Of such moneys already appropriated, or hereafter appropriated, there shall be apportioned and distributed to such county agricultural societies, American institute of the city of New York, and such various town or other agricultural societies, or agricultural clubs, or agricultural fair associations, or agricultural expositions, hereinbefore mentioned, in proportion to the actual premiums paid during the previous year by such agricultural societies, agricultural fair associations, agricultural expositions, agricultural clubs, and the American institute of the city of New York, exclusive of the premiums paid for trials and tests of speed, skill and endurance of man or beast. No such American institute of the city of New York, or such county agricultural society, or such town or other agricultural society, or such agricultural fair association, or such agricultural exposition, or such agricultural club shall receive any more moneys under the provisions of this article in any one year, than it actually paid out in premiums the next preceding year, exclusive of the premiums paid for trials, or tests of speed, skill or endurance of man or beast, and in no event shall any such American institute of the city of New York, or such county agricultural society, or such town or other agricultural society, or such agricultural fair association, or such agricultural exposition, or such agricultural club receive under the provisions of this article, in any one year for premiums here-

after to be paid by any society, association, club or exposition, any sums of money exceeding four thousand dollars. Any such county agricultural society, town or other agricultural society, or agricultural club or fair association, or agricultural exposition, organized under the laws of the state of New York, which shall fail or neglect to hold an annual fair, and file its annual report as provided by this article, with the commissioner of agriculture, as herein provided, for two consecutive years, shall forfeit all of its chartered rights, including any privileges or moneys it might thereafter otherwise be entitled to under the provisions of this article. Except that where the lands or property of any such agricultural society or association have been or may hereafter be taken or appropriated by the state of New York for use in connection with the construction of the barge canal, no such society or association whose lands or property has been or may be so taken or appropriated shall forfeit any of its rights or privileges, or any of the moneys it might otherwise be entitled to under the provisions of this article, unless such society or association shall fail or neglect to hold an annual fair and file its annual report as provided by this article for five consecutive years. All agricultural clubs, societies, agricultural fair associations, agricultural expositions, or the American institute of the city of New York, entitled to receive any portion of the moneys appropriated by the state, must hereafter on or before the fifteenth day of December in each year, file a statement, duly verified by the president and treasurer or secretary, showing the amount of premiums paid at the last annual fair, exclusive of premiums paid for trials or tests of speed, skill or endurance of man or beast, which statement together with vouchers for moneys paid as premiums shall be filed in the office of the commissioner of agriculture, otherwise such society, fair association, exposition, club, or the American institute of the city of New York, shall forfeit its rights to participate in the distribution of such moneys for premiums paid for such year. No other agricultural society, now or hereafter organized which is not entitled to receive moneys under this section, except a county agricultural society, shall be entitled to receive any moneys under the provisions of this article, until it shall have first filed annual reports in the office of the com-

Failure
to hold
annual
fair.

Excep-
tion.

Statement.

New
societies.

missioner of agriculture, as hereinbefore provided, and paid in actual cash premiums for agricultural, mechanical and domestic products at least four thousand five hundred dollars for one year or at least fifteen hundred dollars a year for three consecutive years, exclusive of the premiums paid for trials, or tests of speed, skill or endurance of man or beast. When any such other agricultural society has filed such annual reports and paid such premiums for one year or three successive years as herein provided and to the satisfaction of the commissioner of agriculture, then the said commissioner of agriculture may thereafter allow such society to draw moneys under and by virtue of the provisions of this article. All such county agricultural societies, town or other agricultural societies, or fair associations, or agricultural expositions organized under the laws of the state of New York which have received moneys from the state for premiums paid for the promotion of agriculture and domestic arts, for the promotion of education along agricultural lines, or for the promotion of the improvement of the breeding of cattle, sheep, horses and other domestic animals, shall be deemed as agents for the state in disbursing such moneys and shall be entitled to be reimbursed for such moneys paid as provided in this article, from an annual appropriation which shall not be less than two hundred and fifty thousand dollars. Any agricultural society, agricultural club or agricultural exposition which shall knowingly permit any immoral, lewd, obscene or indecent show or exhibition, use, or knowingly permit the use of, any gambling device, device, instrument or contrivance in the operation of which bets are laid or wagers made, wheel of fortune, or the playing or carrying on of any game of chance, upon the grounds used by it for, or during, an annual meeting, fair or exhibition, shall thereupon forfeit its rights to any moneys it would or might be entitled to receive under the provisions of this article; and it shall be the duty of the president and secretary or treasurer of every agricultural society, agricultural club, or agricultural exposition entitled to receive money under the provisions of this article, to certify, in its annual report to the commissioner of agriculture, executed under oath, on or before the fifteenth day of December, in each year, that at the last annual meeting, fair or exhibition held by or under the direction of such society, club or

Legal
status of
societies.

Shows and
gambling.

Certificate
as to
gambling,
etc.

exposition, it did not knowingly permit any immoral, lewd, obscene or indecent show or exhibition by whatever name known, or use or knowingly permit the use of, any gambling device, device, instrument or contrivance in the operation of which bets were laid, or wagers made, any wheel of fortune, or the playing or carrying on of any game of chance, upon the grounds used by it for, or during such last annual meeting, fair or exhibition, which report shall be filed in the office of the commissioner of agriculture. If the president and secretary or treasurer of any agricultural society, agricultural club or agricultural exposition, entitled to receive moneys under the provisions of this article, shall neglect or refuse to make and file such certificates, such society, club or exposition shall thereupon be deemed to have forfeited all its rights to any moneys it might otherwise be entitled to receive under this article for such year, but this shall not be construed to prohibit horse racing, or tests or trials of skill. *(As amended by chapter 459 of the Laws of 1913.)*

Failure to
file cer-
tificate.

§ 311. **Distribution of moneys appropriated for certain agricultural societies.** Of all moneys appropriated in the regular appropriation bill during any one year by the legislature for distribution among the agricultural societies by the commissioner of agriculture, the said commissioner may distribute to the agricultural societies entitled to partake thereof an amount to each one, on or after the first day of October, in the said year, from the moneys due said society not to exceed fifty per centum of the amount of premiums paid by the said society at its annual fair held during said year. Any balance or balances shall be distributed as provided by section three hundred and ten of this chapter.

Balance.

§ 312. **Annual report to the commissioner of agriculture and state society.** The president and treasurer of any agricultural society which receives any money of the state or acts as the agent of the state in the distribution of money of the state as premiums, shall annually before the fifteenth day of December, transmit to the commissioner of agriculture a detailed account of the expenditure or distribution of all such moneys as shall have come into their hands during the preceding year, and of such other

Account of
disposal of
moneys.

Report to
state agri-
cultural
society.

moneys as they may have received from voluntary contributions for distribution as premiums, stating to whom, and for what purpose paid, with the vouchers therefor. The presidents of the several county societies and of the American institute shall annually transmit in the month of December, to the executive committee of the New York state agricultural society, all such reports or returns as they are required to demand from applicants, for premiums, together with an abstract of their proceedings during the year, which shall be examined by such executive committee, and they shall condense, arrange and report the same, with a statement of their own proceedings, to the legislature on or before the first day of March in each year.

Report to
legislature.

§ 313. **Lease of grounds of agricultural societies and corporations.** Any agricultural society or corporation, owning or possessing grounds in a county of this state having a population of more than three hundred thousand and less than six hundred thousand may lease such grounds for any lawful purpose except running races not inconsistent with the use thereof for the purposes of the society or corporation, for such time or times as said grounds may not be needed by any such agricultural society or corporation for its own purposes.

Purpose.

Time.

Prohibition.

§ 314. **Manufacture and sale of imitation maple sugar and syrup prohibited.** 1. No person shall manufacture for sale, keep for sale, or offer or expose for sale, any sugar in imitation or semblance of maple sugar which is not pure maple sugar, nor any syrup in imitation or semblance of maple syrup, which is not pure maple syrup, nor shall any person manufacture, offer or expose for sale any sugar as and for maple sugar which is not pure maple sugar, nor any syrup as and for maple syrup which is not pure maple syrup.

Terms
defined.

2. For the purpose of this article the term "maple sugar" shall be deemed to mean sugar made from pure maple sap or pure maple syrup, and the term "maple syrup" shall be deemed to mean syrup made from pure maple sap.

People v. Munn, 131 App. Div. 341.

§ 315. **Branding and labeling of maple sugar and syrup mixtures.** No person shall manufacture, sell or expose for sale, any com-

pound or mixture as and for sugar which shall be made up of Sugar.
 maple sugar mixed with any other sugar or any other substance
 without branding or labeling the said sugar with a statement giv-
 ing the ingredients of which it is made up. No person shall
 manufacture, sell, expose for sale or offer for sale any compound
 or mixture as syrup which shall be made up of maple syrup mixed Syrup.
 with any other syrup or ingredient without branding or labeling
 said syrup with a statement giving the ingredients of which it
 is made up. This shall not be construed to apply to a syrup or Exceptions.
 syrups manufactured and sold for medicinal purposes only.

§ 316. **Association of farmers; powers of.** Any association of
 farmers, residing in any neighborhood, town or county in this
 state, now, or hereafter to be organized, and acting under a con-
 stitution and by-laws adopted by themselves for their guidance,
 which shall be filed in the clerk's office of such town or county
 and which are not inconsistent with the laws of this state, is hereby
 authorized to lease and maintain grounds and structures for the Mainte-
 exhibition and sale of the products of their farms or their skill, nance of
 and for the instruction and recreation of its members and visitors. grounds.
 Any such association shall have authority to let, for rent, locations Renting.
 on their leased grounds to shopmen and persons wishing to furnish
 suitable refreshments for victualing members and visitors; to
 license peddlers to sell on their grounds articles of merchandise, Licensing.
 not forbidden to be sold by any law of this state without license
 from the state; and in the name of such association and upon the
 action and direction of its officers, to sue for and collect the stipu-
 lated sums for such rentals and licenses, and to enforce the ob- Enforce-
 servance of its rules and regulations by the several members of ment of
 its association. And such association is hereby empowered to rules.
 issue certificates of indebtedness in amounts of five dollars each, Certificate
 providing that the whole amount shall not exceed the sum of one of indebted-
 thousand dollars, which they may sell at a price not below the ness.
 par value thereof, for the purpose of raising money for the erec-
 tion of buildings, or for such other improvements as may be
 deemed necessary by a majority of the members of such association.

§ 317. **County judge may appoint policemen or constables.** The
 county judge of any county in this state wherein such a voluntary

Appoint-
ment of
officers of
peace.

Powers of
officers.

association of farmers may exist is hereby authorized, upon the nomination of the presiding officer, or the executive committee of such association, to appoint any number of reputable persons, citizens of such neighborhood, town or county, as special policemen or constables, who shall have authority to preserve the peace at any meeting of such association on its grounds or in the neighborhood thereof; and to protect the property of such association or of any of its members, visitors, lessees or licensees while on such grounds or on the way to or from such grounds. But such special policemen or constables shall have no authority, from such appointment, to act as policemen or constables, other than as herein authorized, except that they may arrest any person committing unlawful depredation on such grounds, or unlawfully injuring persons or property thereon, or on the way to or from such grounds, or otherwise committing breaches of the peace, and may take such persons so offending, when arrested, before some proper magistrate, to be dealt with according to law.

§ 318. **Registration of rural residences.** The owner, or owners, if husband and wife, in fee of a parcel of land having a dwelling house thereon and containing over one hundred acres, wholly situate outside of the limits of an incorporated village or city, may cause such premises to be registered under a designation approved by the secretary of state, with which designation may be associated, if desired, a device, likewise approved, by filing in the office of the secretary of state such approved designation with a description of the premises, by metes and bounds, together with a map upon a scale established in said office and paying a fee of ten dollars besides the payment for recording the description and for copying the map, upon the reduced scale, in the book of registration

Superin-
tendent
salary.

§ 319. **Bureau of supervision of co-operative associations.** There is hereby established in the department of agriculture a bureau of supervision of co-operative associations. The bureau shall be in charge of the superintendent who shall be appointed by the commissioner of agriculture. He shall receive an annual salary of three thousand dollars, and all necessary traveling and

other expenses incurred in the performance of his duties. The superintendent of co-operative associations shall under the direction of the commissioner of agriculture have general charge of the ^{Duties.} development of agricultural co-operative associations, for the buying and selling of farm produce throughout the state; shall assist at the organization of such associations at points where they can be developed; shall issue such information as shall be necessary and desirable for the increase of co-operative associations of this class, and shall collect and disseminate through farmers' institutes or otherwise, as the commissioner may direct, information, statistics and other assistance leading to the development of co-operative associations. Such superintendent shall also visit from time ^{Visitation.} to time co-operative associations formed in this state and assist them with aid and advice in the management and conduct of their affairs. He shall report quarterly to the commissioner of agriculture the results of his endeavors and the conditions of co-operative associations within the state. (*As added by chapter 235 of the Laws of 1913.*)

ARTICLE XV

Inspection and Sale of Seeds.

Section 340. Inspection and sale of seeds.

341. Samples, publication of results of examination.

Term
defined.

§ 340. **Inspection and sale of seeds.** Within the meaning of this article " agricultural seeds " are defined as the seeds of alfalfa, Canadian blue grass, Kentucky blue grass, alsike clover, crimson clover, red clover, white clover, vetch orchard grass, rape, red top, and timothy which are to be used for sowing or seeding purposes. No person, firm or corporation shall sell, offer, expose or have in his possession for sale for the purposes of seeding, any seeds of grasses or clovers, of the kind known as agricultural seeds containing in excess of three per centum by count of foul or foreign seeds, unless every receptacle, package, sack or bag containing such seeds is plainly marked or labeled with the per centum of such foul or foreign seeds contained therein. (*As amended by chapter 297 of the Laws of 1912.*)

Prohibition.

Samples
of seed.

Manner
of taking.

Analysis.

Report of
analyst.

Publication
of reports.

§ 341. **Samples, publication of results of examination.** The commissioner of agriculture or his duly authorized representatives shall take samples of seed in triplicate in the presence of at least one witness and in the presence of such witness shall seal such samples and shall at the time of taking tender, and if accepted, deliver to the person apparently in charge one of such samples; one of the other samples the commissioner of agriculture shall cause to be analyzed. The director of the New York agricultural experiment station shall analyze or cause to be analyzed such samples of seeds taken under the provisions of this article as shall be submitted to him for that purpose by the commissioner of agriculture and shall report such analysis to the commissioner of agriculture, and for this purpose the New York agricultural experiment station may employ experts and incur such expenses as may be necessary to comply with the requirements of this article. The result of the analysis of the sample or samples so procured, together with such additional information as circumstances advise, shall be published in reports or bulletins from time to time. (*As amended by chapter 297 of the Laws of 1912.*)

*ARTICLE 16

Laws Repealed; When to Take Effect

Section 360. Laws repealed.

361. When to take effect.

§ 360. **Laws repealed.** Of the laws enumerated in the schedule hereto annexed, that portion specified in the last column is hereby repealed. (*As renumbered by chapter 297 of the Laws of 1912.*)

§ 361. **When to take effect.** This chapter shall take effect immediately. (*As renumbered by chapter 297 of the Laws of 1912.*)

SCHEDULE OF LAWS REPEALED

Laws of	Chapter	Section
1785.....	68.....	1-4
1788.....	54.....	All
1791.....	54.....	4
1792.....	64.....	All
1808.....	187.....	All
1819.....	107.....	All
1820.....	97.....	All
1822.....	236.....	All
1824.....	265.....	All
1841.....	169.....	1, 2, 4, 5, 7, 8
1841.....	340.....	All
1842.....	176.....	All
1844.....	336.....	All
1845.....	60.....	All
1848.....	299.....	1, 2, 4, 5, 7
1854.....	230.....	All
1862.....	293.....	All
1862.....	467.....	All
1864.....	518.....	All
1864.....	544.....	All
1865.....	361.....	All
1865.....	559.....	All
1866.....	740.....	All

* Formerly article 15. Renumbered by chapter 297 of the Laws of 1912.

Laws of	Chapter	Section
1867.....	453.....	All
1869.....	167.....	All
1869.....	210.....	All
1869.....	271.....	All
1869.....	563.....	All
1876.....	161.....	All
1877.....	415.....	All
1878.....	134.....	All
1878.....	220.....	All
1878.....	237.....	All
1879.....	306.....	All
1880.....	439.....	All
1880.....	592.....	All
1881.....	300.....	All
1881.....	657.....	All
1881.....	702.....	All
1882.....	214.....	All
1882.....	215.....	All
1882.....	238.....	All
1882.....	246.....	All
1883.....	243.....	1, pt. affecting L. 1879, Ch. 306
1884.....	202.....	All
1884.....	418.....	All
1884.....	474.....	All
1885.....	183.....	All
1885.....	193.....	All
1885.....	427.....	All
1885.....	458.....	All
1886.....	577.....	All except that part of § 6 designated as L. 1885, Ch. 183, § 24
1886.....	606.....	All
1887.....	155.....	All
1887.....	223.....	All
1887.....	403.....	All
1887.....	430.....	All
1887.....	583.....	1, pt. adding § 27 to L. 1885, Ch. 183; 2-4

Laws of	Chapter	Section
1887.....	634.....	All
1888.....	286.....	All
1888.....	298.....	All
1888.....	550.....	All
1889.....	148.....	All
1889.....	515.....	All
1889.....	538.....	All
1891.....	140.....	All
1891.....	354.....	All
1892.....	501.....	All
1893.....	338.....	All
1893.....	364.....	All
1893.....	564.....	All
1893.....	726.....	1, pt. constituting fourth ¶ on page 1840
1894.....	143.....	All
1894.....	241.....	All
1894.....	376.....	All
1894.....	426.....	1
1894.....	617.....	All
1894.....	640.....	All
1894.....	675.....	All
1895.....	134.....	All
1895.....	587.....	All
1895.....	763.....	All
1895.....	820.....	All
1896.....	221.....	All
1896.....	955.....	All
1897.....	500.....	All
1897.....	554.....	1
1897.....	589.....	All
1897.....	768.....	All
1898.....	113.....	All
1898.....	153.....	All
1898.....	194.....	All
1898.....	412.....	All
1898.....	482.....	All

Laws of	Chapter	Section
1898.....	491.....	All
1898.....	494.....	All
1898.....	557.....	All
1898.....	558.....	All
1898.....	559.....	All
1899.....	101.....	All
1899.....	149.....	All
1899.....	223.....	All
1899.....	303.....	All
1899.....	435.....	All
1899.....	510.....	All
1899.....	518.....	All
1899.....	687.....	All
1900.....	76.....	All
1900.....	79.....	All
1900.....	87.....	All
1900.....	101.....	All
1900.....	118.....	All
1900.....	339.....	All
1900.....	346.....	All
1900.....	534.....	All
1900.....	544.....	All
1900.....	559.....	All
1901.....	144.....	All
1901.....	224.....	All
1901.....	308.....	All
1901.....	321.....	1, 3, 4
1901.....	375.....	All
1901.....	417.....	All
1901.....	429.....	All
1901.....	656.....	All
1902.....	27.....	All
1902.....	30.....	All
1902.....	31.....	All
1902.....	214.....	All
1902.....	240.....	All
1902.....	263.....	All

Laws of	Chapter	Section
1902.....	385.....	All
1902.....	519.....	All
1902.....	521.....	All
1903.....	20.....	All
1903.....	142.....	All
1903.....	214.....	All
1903.....	524.....	All
1904.....	27.....	All
1904.....	168.....	All
1904.....	253.....	All
1904.....	391.....	All
1904.....	439.....	All
1904.....	447.....	All
1904.....	480.....	All
1904.....	558.....	All
1904.....	566.....	All
1904.....	567.....	All
1904.....	570.....	All
1904.....	702.....	All
1905.....	100.....	All
1905.....	167.....	All
1905.....	171.....	All
1905.....	243.....	All
1905.....	601.....	All
1905.....	602.....	All
1905.....	603.....	All
1905.....	759.....	All
1906.....	372.....	All
1906.....	584.....	All
1906.....	605.....	All
1907.....	137.....	All
1907.....	178.....	All
1907.....	226.....	All
1907.....	241.....	All
1907.....	281.....	All
1907.....	322.....	All
1907.....	406.....	All

Laws of	Chapter	Section
1907.....	483.....	All
1907.....	484.....	All
1907.....	493.....	All
1907.....	610.....	All
1907.....	684.....	All
1907.....	713.....	All
1908.....	31.....	All
1908.....	215.....	All
1908.....	279.....	All
1908.....	283.....	All
1908.....	486.....	All
1908.....	518.....	All
*1909.....	9.....	104, 105

* Repealed by chapter 232 of the Laws of 1909.

EXTRACTS
FROM THE
**COUNTY LAW, TOWN LAW, LABOR LAW, AND GENERAL
BUSINESS LAW,**
AND OTHER
**ENACTMENTS OF THE LEGISLATURE WHICH BEAR SOME
RELATION TO AGRICULTURE**

[1991]

ARTICLE 7 OF THE COUNTY LAW:

Chapter 16 of the Laws of 1909 being chapter 11 of the Consolidated Laws
as amended by the Laws of 1913.

Dogs

- Section 110. Tax on dogs.
111. Rate of taxation when not fixed by the board.
 112. Owner to deliver description.
 113. Tax, how collected.
 114. Application of proceeds of tax and other moneys.
 115. Collector's fees.
 116. When payment of tax to be proved.
 117. Liability of owners of dogs for injuries.
 118. Duties and powers of fence viewers.
 119. Certificate to be evidence.
 120. Duties of town board.
 121. Tax to pay orders for sheep or angora goats killed.
 122. When owners shall refund.
 123. Dogs chasing sheep or angora goats to be killed.
 124. Owner to kill dog after notice.
 125. When justice may order dog killed.
 126. Who deemed owner of dog.
 127. Penalties, collection and application of.
 128. Adoption by county of dog registration provisions.
 129. Payment of fees; issue of tags; definition of dog.
 130. Duties of assessors.
 131. Duty of town clerk.
 132. Penalties; actions therefor.
 133. Seizure of dogs not tagged or registered.
 134. Value to be recovered.
 135. Disposition of registration fees and penalties.
 136. Actions for injury or destruction of unregistered dogs.

§ 110. **Tax on dogs.** Each board of supervisors, except in counties having a population of eight hundred thousand or over, may fix and impose a tax on dogs within the several cities and

towns in its county. The board of supervisors of any such county may fix or impose a tax upon dogs in any town therein at a different rate than that imposed upon dogs in other towns in such county, upon the written application of the town board of such town. Such application shall specify the rate of tax to be imposed in such town. Such taxes shall be assessed, collected and applied in the manner provided by sections one hundred and thirteen and one hundred and fourteen of this chapter. If they do not exercise the powers herein conferred, the following provisions, so far as they relate to the taxation of dogs and the manner of collecting the same, shall apply to such county and the towns therein. The provisions of sections one hundred and ten to one hundred and twenty-seven, both inclusive, shall not affect cities of the second class.

§ 111. **Rate of taxation when not fixed by the board.** Except in the county of Kings, the county of Westchester and the city of Buffalo, there shall be annually levied and collected the following tax on dogs over four months old: Upon every bitch owned or harbored by any one or more persons, or by any family, three dollars; upon every additional bitch owned or harbored by the same person or persons or family, five dollars; upon every dog other than a bitch owned or harbored by one or more persons, or by any family, fifty cents; and upon every additional dog, other than a bitch, owned or harbored by the same person or persons or family, two dollars.

§ 112. **Owner to deliver description.** The owner and possessor of every dog liable to such tax, shall, whenever required by any assessor, deliver to him a written description of every such dog owned or possessed by him. For every neglect or refusal so to do, and for every false statement made in any description so furnished, he shall forfeit five dollars, to be recovered by the supervisor of the town.

§ 113. **Tax, how collected.** The assessors of every town, city or ward, shall annex to the assessment-roll of real and personal estate therein, made by them annually, the name of each and

every person liable to the tax imposed thereby, together with the number of bitches and dogs for which such person is assessed, and return the same to the supervisors of their respective towns, cities or wards, to be laid by each supervisor before the board of supervisors, to be assessed and collected in the same manner as other state, county and town taxes are collected; and if any person duly assessed, shall refuse or neglect to pay the tax so assessed, within five days after demand thereof, it shall be lawful for any person, and it shall be the duty of the collector to kill the dog so taxed.

§ 114. **Application of proceeds of tax and other moneys.** The collector of each town shall pay over the taxes so collected to the supervisor of the town, and the moneys so collected and paid over shall, in each town, constitute a town fund for paying the damages arising in such town from dogs killing or injuring sheep or angora goats; and such moneys, or the balance thereof, which shall remain in the hands of the supervisor of any town for the period of one year, may, by a vote of the town board of any town, be appropriated for the purpose of building and repairing highways and bridges or for the payment of the contingent expenses of such town.

If such town fund applicable to the payment of such damages becomes exhausted and claims for damages are thereafter presented, the supervisor may certify the fact to the treasurer of any village in his town, in which a resolution of the board of supervisors is in force pursuant to the provisions of sections one hundred and twenty-eight to one hundred and thirty-six of this chapter, and shall thereupon be entitled to receive from said treasurer the amount of all such unpaid claims, or so much thereof as may then be in the hands of such treasurer applicable to such purposes and accumulated since the close of the last preceding fiscal year of such village; and the moneys thus received by the supervisor shall be applied to the payment of such damages.

§ 115. **Collector's fees.** Each collector shall be allowed to retain a commission of ten dollars on every hundred dollars collected, and at that rate upon all sums collected by him pursuant to this

article, and upon filing his affidavit of the fact with the supervisor, be entitled to retain, as a further compensation from the moneys collected by him, the sum of one dollar for every dog or bitch killed by him under the provisions of this article.

§ 116. **When payment of tax to be proved.** In any action brought for the killing of any dog, it shall be incumbent on the plaintiff in such action to prove that the tax imposed upon such dog, if any, by the provisions of this article, has been paid.

§ 117. **Liability of owners of dogs for injuries.** The owner or possessor of any dog that shall kill, injure or wound any sheep or lambs, or angora goats or kids, shall be liable for the value of such sheep or lamb, or angora goat or kid, to the owner thereof, without proving notice to the owner or possessor of such dog, or knowledge by him that his dog was mischievous or disposed to kill or injure sheep or angora goats. In any action brought against the owner or possessor of a dog for the injuring of sheep, lambs, angora goats or kids, the injury for which a recovery may be had may include the permanent fright of such sheep, lambs, angora goats or kids caused by the chasing or worrying thereof by such dog; and if prima facie evidence be adduced by the plaintiff of such worrying or chasing it shall be incumbent on the defendant to prove that the same did not result in the permanent fright of the sheep, lambs, angora goats or kids alleged to have been injured. The terms "injury" or "injuring," as used in section one hundred and fourteen and the ensuing sections of this article, in relation to the claims of an owner of any sheep, lambs, angora goats or kids, against the owner or possessor of the dog or against a town or a town fund, or in relation to the purposes for which taxes, penalties or other moneys, shall be applied, shall include injury consisting of permanent fright of sheep, lambs, angora goats or kids, caused by the worrying or chasing thereof by a dog. (*As amended by Chapter 200 of the Laws of 1912.*)

§ 118. **Duties and powers of fence viewers.** The owner of any sheep or lambs, or angora goats or kids, that may be killed or injured by dogs, may apply to any two fence viewers of the town,

village or city where such sheep or lambs, or angora goats or kids were killed or injured, who shall inquire into the matter, and examine witnesses in relation thereto, and if they shall be satisfied that the same were killed by dogs, and in no other way, they shall certify such fact, the number of sheep or angora goats killed, and the number injured and the value of the sheep or angora goats killed or injured immediately previous to such killing or injury, the value of the sheep or angora goats after being so killed or injured, together with the amount of their fees.

§ 119. **Certificate to be evidence.** Such certificate shall be presumptive evidence of the facts therein contained, in any civil action or proceeding.

§ 120. **Duties of town board.** Such certificate shall be presented to the town board at its second annual meeting for audit; and if such board shall be satisfied by the oath of the person claiming such damages that he has not been able to discover the owner or possessor of the dog or dogs, by which such damage was done, or that he has failed to recover his damages of such owner or possessor, it shall give an order on the supervisor of the town for the amount which it shall allow, who shall pay such order out of the funds arising from the provisions of this article.

§ 121. **Tax to pay orders for sheep or angora goats killed.** Whenever the amount of the orders for damages, given by the town board to the owners of sheep or angora goats killed or injured by dogs, shall exceed the amount of the dog fund in the hands of the supervisor of such town, the town board may, in its discretion, add to the accounts of such town, the amount of such orders then due and unpaid, but the amount so added shall not exceed the sum of three hundred dollars in any one year.

§ 122. **When owner shall refund.** If, after receiving the amount of such damages from the supervisor, the owner of the sheep or angora goats so killed or injured shall receive or recover the value or any part thereof, from the owner or possessor of the dog or

dogs doing the damage, he shall repay to the supervisor the sum so recovered. In case of his refusal or neglect, the supervisor shall bring an action therefor against him in the name of the town, which sum, when received, shall be returned to the dog fund of the town.

§ 123. **Dogs chasing sheep or angora goats to be killed.** Any person may kill any dog which he shall see wrongfully chasing, worrying or wounding any sheep or angora goats.

§ 124. **Owner to kill dog after notice.** The owner or possessor of every dog, to whom notice shall be given of any injury done by his dog to any sheep or angora goat, or of his dog having chased or worried any sheep or angora goat, shall, within forty-eight hours after such notice, cause such dog to be killed; for every neglect so to do, he shall forfeit two dollars and fifty cents, and the further sum of one dollar and twenty-five cents for every forty-eight hours thereafter, until his dog shall be killed, unless it shall satisfactorily appear to the court before which an action shall be brought for the recovery of the said penalties, that it was not in the power of such owner or possessor to kill such dog.

§ 125. **When justice may order dog killed.** If any dog shall attack any person peaceably traveling on any highway, or his horse or team, or any domestic animal peaceably traveling on any highway in charge of any such person, and complaint thereof be made to a justice of the peace, such justice shall inquire into the complaint, and if satisfied of its truth, and that such dog is dangerous, he shall order the owner or possessor of such dog to kill him immediately. The owner or possessor of any dog, who shall refuse or neglect to kill him within forty-eight hours after having received such order, shall forfeit the sum of two dollars and fifty cents, and the further sum of one dollar and twenty-five cents for every forty-eight hours thereafter, until such dog is killed.

§ 126. **Who deemed owner of dog.** Every person in possession of any dog, or who shall suffer any dog to remain about his house for the space of twenty days, previous to the assessment of a tax,

or previous to any injury, chasing or worrying of sheep or angora goats, or any such attack made by a dog, shall be deemed the owner of the dog for all the purposes of this article.

§ 127. **Penalties, collection and application of.** The penalties imposed by this article for failure to kill dogs as prescribed therein shall be collected by the supervisor of the town where they are incurred, upon complaint being made to him of such failure, in the manner provided by the town law for the recovery of penalties given by law to a town for its use. Such penalties when so collected shall be paid into the town fund provided by this article for the payment of damages incurred by dogs killing sheep or angora goats in such town.

§ 128. **Adoption by county of dog registration provisions.** The board of supervisors of any county may, by resolution adopted at an annual meeting, determine that the provisions of sections one hundred and twenty-eight to one hundred and thirty-six, both inclusive, of this article shall apply to such county, or to any specified town or village therein, after a date to be designated in such resolution, which date shall be subsequent to the last publication of the resolution as herein required, but no such resolution shall be adopted affecting any town or village in such county separately, except upon the written application of the town board of such town or the trustees of such village. Such resolution shall also prescribe the annual registration fee to be paid within such county, or within the several towns or villages specially affected by it, for every dog over four months old. A certified copy of such resolution shall be filed in the offices of the secretary of state and of the county clerk of such county, and also in the office of the clerk of the town or village affected by any such resolution if it relates to a single town or village; and such resolution, together with sections one hundred and twenty-eight to one hundred and thirty-six, both inclusive, of this article, shall be published once in each week for six successive weeks in at least two newspapers published in the county to be designated by the board of supervisors, one of which shall be a newspaper published in the town or village specially affected, if such resolution relates to a single

town or village and there be a newspaper published therein. After the date specified in such resolution, which shall be subsequent to such publication, no taxes upon dogs shall be assessed in any town or village in such county affected by such resolution, and the board of supervisors may at any subsequent meeting thereof prescribe a different annual registration fee, but must publish such change at least once each week for three successive weeks in at least two newspapers to be designated by the board of supervisors, but such registration fee must be uniform in any one year in all the towns and villages of the county to which such sections of this article are then applicable. The board of supervisors of such county may thereafter, by resolution adopted, filed and published in like manner, determine that the provisions of such sections shall not apply to such county, or to any separate town or village therein to which such provisions have been made to apply as aforesaid, and after the date specified in such resolution the provisions of law for assessment and collection of taxes on dogs shall apply to such county or to any separate town or village affected by the resolution last above mentioned, as if the resolution applying such sections had not been adopted.

When a resolution is in force which applies such sections to any town and to any village therein, separately, it shall be deemed to mean that the said sections apply, in respect to such town, to that portion thereof only which is outside of the corporate limits of such village and to the dogs owned or harbored in such outside territory. None of the provisions of this or of the ensuing sections of this article shall apply to any village situate in two or more counties, or to any village in two or more towns, unless a resolution is in force which applies such sections to all parts of the towns in which such villages are situate.

§ 129. **Payment of fees; issue of tags; definition of dog.** Within thirty days after the date specified in any such resolution making sections one hundred and twenty-eight to one hundred and thirty-six, both inclusive, of this article applicable to any county or to some specified town or village, every person resident within a town or village to which such resolution applies, owning or harboring a dog over four months old shall pay to the town clerk

of the town or the clerk of the village in which he resides the registration fee prescribed by such resolution; and every person who shall thereafter acquire or harbor such a dog for which such registration fee has not been paid shall pay such fee within ten days after acquiring or harboring the same. A fee so paid shall entitle such dog to registration until the thirty-first day of December following such payment; and thereafter on or before the tenth day of January in each year a like fee shall be paid by a person owning or harboring such dog. Upon the receipt thereof, the town or village clerk, as the case may be, shall enter in a book kept for that purpose the name of such owner or person, a description of such dog, and the date of the payment of the registration fee; and shall furnish for the use of such dog a suitable metallic tag stamped with the year of issuance and with a number corresponding with the registration number of such dog. Such tag shall be worn by such dog at all times during the year for which the registration fee shall be so paid. The town or village clerk, as the case may be, shall furnish a duplicate of such tag, whenever the same shall be lost, upon payment of the cost thereof. The expense of procuring such tags shall be paid in the same manner as other town or village charges, respectively, from the moneys received from the registration fees. The term "dog," as used in sections one hundred and twenty-eight to one hundred and thirty-six, both inclusive, of this article, includes bitch.

§ 130. **Duties of assessors.** The assessors of each town in such county shall annually, at the time of the completion of their assessment-rolls as provided by law, make a list containing the name of every person resident within their town liable to pay a registration fee for dogs as provided by section one hundred and twenty-nine of this article, together with the number of dogs owned or harbored by such person, and forthwith deliver such list signed by them to the town clerk.

If a resolution of the board of supervisors is separately in force in any village providing for a registration of dogs therein, then the assessors or assessing officers of such village shall in like manner file with the village clerk a like list of the dogs owned or harbored by the residents thereof.

§ 131. **Duty of town clerk.** The clerk of each town or village wherein said resolution is applicable, in such county, when he shall be informed by such list or otherwise that there is any dog which has not been registered, shall forthwith bring an action as prescribed in the next section against the owner of such dog or the person harboring the same, or he shall forthwith give written notice to any constable of the town, or if in a village then to any policeman or other peace officer thereof, requiring him to take such dog into his possession, and dispose of the same as prescribed in section one hundred and thirty-three of this article.

§ 132. **Penalties; actions therefor.** Every person liable to pay a registration fee for a dog who shall fail to pay the same as herein provided, or who shall knowingly permit any dog, owned or harbored by him, to be at large without wearing a tag issued by the town or village clerk, shall forfeit the sum of five dollars, to be recovered in an action brought before a justice of the peace of the town wherein the person owning or harboring such dog may be, in the name of the town or village in which such dog is required to be registered, upon the complaint of the town or village clerk, respectively, as the case may be; and the justice before whom a judgment for such penalty is recovered shall direct, in the execution issued upon such judgment, that, in case of the failure to collect the whole of such judgment besides costs, the dog for which such registration fee has not been so paid, or which has been so permitted to be at large, shall be taken into the possession of the constable receiving such execution and forthwith killed by shooting, and thereupon it shall be the duty of such constable to take such dog into his possession and forthwith kill the same. A judgment so recovered shall not constitute a bar to a further action to recover such penalty brought subsequent to the recovery of such judgment so long as such violation shall continue, nor shall the recovery or collection of such judgment exempt the person against whom the same is recovered from a compliance with any provision of sections one hundred and twenty-eight to one hundred and thirty-six, both inclusive, of this article.

§ 133. **Seizure of dogs not tagged or registered.** Each constable in such county where such resolution shall be made applicable to

the whole county and each constable in the town or policeman or peace officer in the village to which such resolution shall be made applicable, where such resolution shall be made applicable to one or more towns or villages only, shall, after the expiration of such thirty days from the date specified in such resolution, seize and keep in his possession, until disposed of as herein provided, every dog running at large in his county, town or village, respectively, and not wearing such tag, and every dog of which he shall be informed by the clerk of his town or village by written notice. He shall forthwith post a notice in a conspicuous place in the office of the town clerk, or clerk of the village, as the case may be, containing a description of the dog so seized, and a statement of the time of seizure thereof, and that the said dog will be killed at the end of seventy-two hours from the time of posting such notice, stating the hour of such posting, unless the same is registered and the fee for seizing the same as herein provided is paid within such time, and shall also serve a copy of the notice so posted, at least forty-eight hours before such dog shall be killed, upon the owner or person harboring such dog, provided that he be known to such constable, policeman or peace officer, or can with reasonable diligence be ascertained by him within said county, personally or by leaving the same at his last known place of residence with a person of suitable age and discretion. Such officer shall at the end of seventy-two hours from the time of posting and after so serving such notice kill such dog by shooting, unless the same shall, before the expiration of that time, be registered and a tag procured for the same as provided in section one hundred and twenty-nine, and in addition thereto, the sum of two dollars be paid to such officer for his fees, in which case such dog shall be released. Every officer shall be entitled to receive a fee of one dollar for each dog seized and killed by him under the provisions of this section or of section one hundred and thirty-two of this article, to be paid as other town charges are paid from moneys received from registration fees. Town boards may appoint and employ one or more persons to perform the services which constables and other peace officers are authorized to perform in the seizure, detention and final disposition of dogs found running at large in their towns and not wearing a tag as *heren provided, and may provide for the payment of the

* So in original.

persons so appointed and employed, for the services rendered by them. (*As amended by chapter 629 of the Laws of 1913.*)

§ 134. **Value to be recovered.** The value of any dog destroyed by any constable except as herein provided may be recovered by the owner of such dog from either such constable or the town therein such dog is destroyed.

§ 135. **Disposition of registration fees and penalties.** The town clerk shall at the end of every calendar month pay to the supervisor all fees received by him during such month for the registration of dogs and bitches under this article, less the sum of twenty-five cents for each dog and bitch registered, which may be retained by him as his fee therefor. Any village clerk receiving such fees or the proceeds of penalties provided for by this chapter shall pay over the same monthly, less such registration fees, to the village treasurer, and the latter shall retain the same in a separate fund until the close of the fiscal year of such village, excepting that he shall, from time to time, pay therefrom to the supervisor of the town in which such village is located any portion thereof which the supervisor certifies to be needed for satisfying claims for the killing or injuring of sheep in such town after the other moneys in the hands of the supervisor, applicable to such purposes, have been exhausted. Any part of such fund in the hands of a village clerk and treasurer not so paid out and remaining in their hands at the close of such fiscal year shall belong to the village and may be applied to such village purpose as the trustees thereof may direct. A justice of the peace before whom a penalty is recovered as provided in section one hundred and thirty-two of this article, if the complaint was made by a town clerk, shall forthwith pay one-half thereof, when collected, to the supervisor, and one-half to the town clerk for his fees in making the complaint in the action in which such penalty is recovered. The money paid to the supervisor pursuant to this section on account of registration fees and penalties, or paid to him by any village clerk under the provisions of this section, shall, except as otherwise provided herein, be applied for the same purposes as provided by law with respect to taxes collected upon dogs. If the complaint in any action for such

penalty was made by a village clerk, then the whole of such penalty shall be paid to such clerk to be thereafter applied as hereinabove in this section provided.

§ 136. **Actions for injury or destruction of unregistered dogs.** No person shall hereafter maintain an action for an injury to or the destruction of any dog, unless it shall affirmatively appear that such dog has been duly registered as provided by section one hundred and twenty-nine of this article. Nothing in sections one hundred and twenty-eight to one hundred and thirty-six, both inclusive, shall apply to an incorporated city of the state.

ARTICLE 19 OF THE TOWN LAW:

Chapter 63 of the Laws of 1909 being chapter 62 of the Consolidated Laws as amended by the Laws of 1913.

Fences

- Section 360. Apportionment of division fence.
361. When lands may lie open.
362. Division fence on change of title.
363. Settlement of disputes.
364. Powers of fence viewers.
365. Neglect to make or repair division fence.
366. Fence destroyed by accident.
367. Damages for insufficient fence.
368. Damages for omitting to build fence.
369. Use of barbed wire for division fence.

§ 360. **Apportionment of division fence.** Each owner of two adjoining tracts of land, except when they otherwise agree, shall make and maintain a just and equitable portion of the division fence between such lands, unless both of said adjoining owners shall agree to let their said lands lie open, along the division line, to the use of all animals which may be lawfully upon the lands of either. When the adjoining lands shall border upon any of the navigable lakes, streams or rivers of the state, the owners of the lands shall make and maintain the division fence between them down to the line of low water mark, in such lakes, streams or rivers, except those lands which overflow annually so as to be so submerged with water that no permanent fence can be kept thereon, and known as low flat lands; and when adjoining lands shall be bounded by a line between the banks of streams of water not navigable, and the owners or occupants thereof cannot agree upon the manner in which the division fence between them shall be maintained, the fence viewers of the town shall direct upon which bank of the stream, and where the division fence shall be located, and the portion to be kept and maintained by each adjoining owner. (*As amended by chapter 86 of the Laws of 1911.*)

§ 361. **Lands lying open.** When the owners of adjoining lands shall choose to let them lie open, as provided in section three hundred and sixty, neither of such owners shall be liable to the other in any action or proceeding for any damages done by animals lawfully upon the former's premises going upon the lands so lying open or upon any other lands of the owner thereof through such lands so lying open. Either owner of any lands so lying open and adjoining, may, unless the agreement is for a specified period, and after such agreement has expired may then have the same enclosed, by giving written notice to that effect to the owners or occupants of the adjoining lands, whereupon it shall be the duty of both parties to build and maintain their several proportions of a division fence. (*As amended by chapter 86 of the Laws of 1911.*)

§ 362. **Division fence on change of title.** Whenever a subdivision, or new apportionment of any division fence shall become necessary by reason of transfer of the title of either of the adjoining owners, to the whole, or any portion of the adjoining lands, by conveyance, devise or descent, such subdivision or new apportionment shall thereupon be made by the adjoining owners affected thereby; and either adjoining owner shall refund to the other a just proportion of the value at the time of such transfer of title, of any division fence that shall theretofore have been made and maintained by such other adjoining owner, or the person from whom he derived his title, or he shall build his proportion of such division fence. The value of any fence, and the proportion thereof to be paid by any person, and the proportion to be built by him, shall be determined by any two of the fence viewers of the town, in case of disagreement.

§ 363. **Settlement of disputes.** If disputes arise between the owners of adjoining lands, concerning the liability of either party to make or maintain any division fence, or the proportion or particular part of the fence to be made or maintained by either of them, such dispute shall be settled by any two of the fence viewers of the town, one of whom shall be chosen by each party; and if either neglect, after eight days' notice to make such choice, the

other party may select both. The fence viewers, in all matters heard by them, shall see that all interested parties have had reasonable notice thereof, and shall examine the premises and hear the allegations of the parties. If they can not agree, they shall select another fence viewer to act with them, and the decision of any two shall be reduced to writing, and contain a description of the fence, and the proportion to be maintained by each, and shall be forthwith filed in the office of the town clerk, and shall be final upon the parties to such dispute, and all parties holding under them.

§ 364. **Powers of fence viewers.** Witnesses may be examined by the fence viewers on all questions submitted to them; and either of such fence viewers may issue subpoenas for witnesses, who shall receive the same fees as witnesses in a justice's court. Each fence viewer thus employed shall be entitled to one dollar and fifty cents per diem. The party refusing or neglecting to pay the fence viewers or either of them shall be liable to an action for the same with costs.

§ 365. **Neglect to make or repair division fence.** If any person who is liable to contribute to the erection or repair of a division fence, shall neglect or refuse to make and maintain his proportion of such fence, or shall permit the same to be out of repair, he shall be liable to pay the party injured all such damages as shall accrue thereby, to be ascertained and appraised by any two fence viewers of the town, and to be recovered with costs. The appraisement shall be reduced to writing, and signed by the fence viewers making it. If such neglect or refusal shall be continued for the period of one month after request in writing to make or repair the fence, the party injured may make or repair the same, at the expense of the party so neglecting or refusing, to be recovered from him with costs.

§ 366. **Fence destroyed by accident.** Whenever a division fence shall be injured or destroyed by floods, or other casualty, the person bound to make and repair such fence, or any part thereof, shall make or repair the same, or his just proportion thereof,

within ten days after he shall be so required by any person interested therein. Such requisition shall be in writing, and signed by the party making it. If the person so notified shall refuse or neglect to make or repair his proportion of such fence, for the space of ten days after such request, the party injured may make or repair the same at the expense of the party so refusing or neglecting, to be recovered from him with costs.

§ 367. **Damages for insufficient fence.** Whenever the electors of any town shall have made any rule or regulation, prescribing what shall be deemed a sufficient division fence in such town, any person who shall thereafter neglect to keep a fence according to such rule or regulation shall be precluded from recovering compensation for damages done by any beast lawfully kept upon the adjoining lands that may enter therefrom on any lands of such person, not fenced in conformity to the said rule or regulation, through any such defective fence. When the sufficiency of a fence shall come in question in any action, it shall be presumed to have been sufficient until the contrary be established.

§ 368. **Damages for omitting to build fence.** If any person liable to contribute to the erection or repair of a division fence shall neglect or refuse to make and maintain his proportion of such fence, or shall permit the same to be out of repair, he shall not be allowed to have and maintain any action for damages incurred by beasts coming thereon from adjoining lands where such beasts are lawfully kept, by reason of such defective fence, but shall be liable to pay to the party injured all damages that shall accrue to his lands, and the crops, fruit trees and shrubbery thereon, and fixtures connected with the land, to be ascertained and appraised by any two fence viewers of the town, and to be recovered, with costs; which appraisement shall be reduced to writing and signed by the fence viewers making the same, but shall be only prima facie evidence of the amount of such damages.

§ 369. **Use of barbed or other wire for division fence.** Barbed or other wire may be used in the construction of any division fence, provided, however, that the person or corporation desiring to use

such material shall first obtain from the owner of the adjoining property his written consent that it may be so used. If the owner of the adjoining property refuses to consent to the building of such a fence, it may nevertheless be built in the following manner: The fence shall be of at least four strands of wire with a sufficient bar of wood at the top; and the size of such top bars and of the posts and supports of such fence, and their distances apart, shall be such as the fence viewers of the town may prescribe, and with the posts no further apart than fourteen feet; and such fence shall be otherwise substantially built and a reasonably sufficient inclosure for holding the particular kind or class of cattle or animals usually pastured on either side of the fence. Nothing contained in section three hundred and sixty-seven shall be construed to authorize the electors of any town to prohibit the use of wire fences, for division fences, if such fences comply with the requirements of this section. Whenever such fence shall become so out of repair as to be unsafe, it shall be the duty of the owner or owners to immediately repair the same. But any person building such a fence without the written consent of the owner of the adjoining property shall be liable to all damages that may be occasioned by reason of such fence. But this section shall not be so construed as to permit railroad corporations to use barbed wire in the construction of fences along their lines contrary to the provisions of section fifty-two of the railroad law. (*As amended by chapter 86 of the Laws of 1911.*)

ARTICLE 20 OF THE TOWN LAW:**Strays**

Section 380. Lien upon strays.

381. Notice of lien to town clerk.

382. Impounding strays.

383. Notice of strays to owner.

384. Charges for notice of strays.

385. Fees of fence viewers as to strays.

386. Foreclosure of lien upon strays.

387. Notice of sale of strays by fence viewers.

388. Proceeds of sale of strays.

389. Notice to owner of strays of fence viewers' meeting.

390. Duties of fence viewers as to strays.

391. Foreclosure of lien upon strays by action.

392. Duty of pound-master as to strays; fees.

393. Surplus money upon sale of strays.

394. Damages from other personal property.

395. Penalty for conversion of floating lumber.

396. Application of article.

§ 380. **Lien upon strays.** Whenever any person shall have any strayed horses, cattle, sheep, swine or other beasts upon his inclosed land, or shall find any such beast on land owned or occupied by him doing damage, and such beast shall not have come upon such lands from adjoining lands, where they are lawfully kept, by reason of his refusal or neglect to make or maintain a division fence required of him by law, such person may have a lien upon such beasts for the damage sustained by reason of their so coming upon his lands and doing damage, for his reasonable charges for keeping them, and all fees and costs made thereon, and he may keep such beasts until such damages, charges, fees and costs are paid, or such lien is foreclosed, upon complying with the provisions of this article relating thereto.

§ 381. **Notice of lien to town clerk.** If such beasts are not redeemed within five days after coming upon such lands, the person entitled to such lien shall deliver to the town clerk of the

town, within which such lands or some part thereof shall be, a written notice subscribed by him, containing his residence, and a description of the beasts so strayed or coming upon his lands, as near as may be, and that he claims a lien on such beasts for such damages, charges, fees and costs. The town clerk shall record the notice in a book to be kept by him for that purpose, for which he shall receive ten cents for each beast, to be paid by the person delivering the notice. Such book shall always be kept open for inspection, and no fees shall be taken by the clerk therefor.

§ 382. **Impounding strays.** Within six days after such beasts shall have come upon such lands, such owner or occupant may cause them to be put in the nearest pound in the same town, if there be one, there to remain until they are redeemed, sold or reclaimed according to law. If there be no such pound, or he elect to keep such beasts, he shall cause them to be properly fed and cared for until they are redeemed, sold or reclaimed according to law.

§ 383. **Notice of strays to owner.** Within thirty days after any such beasts may have come or been found upon any lands, the owner or occupant of the lands shall serve a written notice, either personally or by mail, upon the owner of the beasts, if known, that they are upon his lands, or in pound, as the case may be, and are held by him as strays or beasts doing damage, as the case may be; and if such owner is not known, he shall publish such notice, within such time, in the nearest newspaper of the county for at least two successive weeks.

§ 384. **Charges for notice of strays.** The person delivering the notice to the town clerk shall be entitled to receive therefor, in addition to the fees paid the town clerk, fifteen cents each for all horses, mules, cattle and swine, and five cents for each other beast described in the notice. If the charges, damages, costs and fees are not agreed upon between the person delivering the notice and the owner of the beasts, they shall be determined by two fence viewers of the town, one of whom shall be selected by the person claiming the lien, the other by the fence viewer so selected. If such fence viewers can not agree, they shall select another to act with them, and the decision of any two of them shall be final.

§ 385. **Fees of fence viewers as to strays.** Each fence viewer shall be entitled to receive ten cents for every mile he shall be obliged to travel from his residence to the place where the beasts are kept, and seventy-five cents for a certificate of the charges as ascertained by them.

§ 386. **Foreclosure of lien upon strays.** If the owner of such beasts shall not redeem the same within three months after delivery of the notice to the town clerk, the person delivering the notice may foreclose his lien by action, or by a sale of the beasts, as herein provided. When a person claiming a lien, as herein provided, shall fail to establish the same, he shall not be entitled to receive anything for damages, charges, fees or costs, but shall be liable to pay all fees, costs and expenses incurred by reason of his keeping such beasts and the proceedings thereon.

§ 387. **Notice of sale of strays by fence viewers.** After such three months, a fence viewer of the town, on application of the person delivering the notice, shall give at least ten days' previous notice of the time and place of the sale of such beasts, by advertisement posted up in at least five public places in the town where such beasts may have been kept, one of which shall be at or near the outside door of the town clerk's office. At the time and place mentioned, such fence viewers shall sell such beasts to the highest bidder, unless redeemed by the owner.

§ 388. **Proceeds of sale of strays.** Out of the proceeds from such sale, the fence viewer shall retain and pay the sums charged for such notices, fees and costs, together with the sums specified in the certificate for keeping the beasts, and damages done by them; and the like charges for the sale as are allowed on sales under executions issued out of justices' courts, and he shall pay the residue to the owner of the beasts, if he shall appear and demand the same.

§ 389. **Notice to owner of strays of fence viewers' meeting.** When the owner of such beasts is known and resides in the same town where such beasts are kept, five days' notice of the time and place of the meetings of the fence viewers to determine the dam-

ages done by such beasts, and the charges for keeping them, shall be personally served on him; if he resides elsewhere, and his post-office address is known, such notice shall be served by mail or personally.

§ 390. **Duties of fence viewers as to strays.** The fence viewers shall view the premises where damages are claimed to have been done, and they may issue subpoenas, examine witnesses and take any competent evidence of the facts and circumstances necessary to enable them to determine the matter submitted to them, and shall determine any dispute that may arise touching the sufficiency of any division fence around the premises where such damage was done, and from where and how the beasts came upon the lands of the person claiming such damages and charges; if they determine that for any cause the claimant's lien is not enforceable, they shall so certify, and the owner of the beasts shall thereupon be entitled to them without paying any charges thereon.

§ 391. **Foreclosure of lien upon strays by action.** When such lien is foreclosed by action, all questions relating to damages, charges, sufficiency of fence, and from where and how such beasts came upon the lands of the person claiming such damages and charges, shall be proven upon the trial of such action, and no certificate of fence viewers upon such questions shall then be necessary.

§ 392. **Duty of pound-master as to strays; fees.** Every pound-master shall receive and keep all beasts delivered to him as herein provided, until they shall be redeemed, sold or reclaimed, for which he shall be entitled to a reasonable compensation, not exceeding fifty cents per day for a horse or mule, twenty-five cents per day for each head of cattle, and fifteen cents per day for all other beasts, to be determined by the fence viewer making the sale, or the court before whom the action is tried, besides his fees for taking and discharging the beasts, to be paid by the owner of the beasts, if the lien is established, otherwise by the person claiming a lien thereon.

§ 393. **Surplus money upon sale of strays.** If the owner of the beasts shall not appear and demand the residue of such moneys within one year after the sale, he shall be thereafter precluded

from recovering any part thereof, and the same shall be paid by the officer making the sale to the overseers of the poor of the town, or, in cities, to the officers having their powers, for the use of the poor thereof, and their receipt shall be a legal discharge to the keeper of such beasts and the officer selling the same. If the officer who shall have sold such beasts shall not, within thirty days after the expiration of the year, pay such moneys to the overseers of the poor of the town, or, in cities, officers having their powers, he shall forfeit to the town or city double the sum so remaining in his hands, together with the amount of such moneys.

§ 394. **Damages from other personal property.** When any person shall be authorized to distrain inanimate goods or chattels doing damage, or whenever any logs, timbers, boards or plank, in rafts or otherwise, or other personal property shall have drifted upon his lands, he shall be entitled to the same remedies, and shall proceed therein in the same manner and with the same powers as herein provided with respect to beasts found doing damage, so far as such provisions are applicable. He may at any time deliver his notice of lien to the town clerk, describing the property, and he shall keep the same in some convenient place, without removal to a pound, until the property is sold or reclaimed. The same officer shall conduct proceedings therein as in proceedings where beasts are found doing damage, and all proceeds of sale shall be in like manner, paid over and applied, subject to the same penalties and liabilities, and with the same force and effect.

§ 395. **Penalty for conversion of floating lumber.** Whoever shall convert to his own use, without the consent of the owner thereof, any logs, timber, boards or plank, floating in any of the waters of this state, or lying on the banks or shores of any such waters, or on any island where the same may have drifted, shall, for every offense, forfeit to the owner of such logs, or other lumber, three times the value thereof. Nothing contained in this section shall be construed to extend to that kind of lumber called drift-wood.

§ 396. **Application of article.** The villages and cities of this state shall be considered towns for the purposes of this article; and the trustees of the village and the aldermen of the city shall be fence viewers therein for the purposes of this article.

ARTICLE 21 OF THE TOWN LAW:**Pounds**

Section 410. Erection and discontinuance of pounds.

411. Election of pound-masters.

412. Pound-master's fees.

§ 410. **Erection and discontinuance of pounds.** Whenever the electors of any town shall determine, at a biennial town meeting, to erect one or more pounds therein, and whenever a pound shall now be erected in any town, the same shall be kept under the care and direction of a pound-master, to be elected or appointed for that purpose. The electors of any town may, at a biennial town meeting, discontinue any pounds therein.

§ 411. **Election of pound-masters.** Pound-masters may be elected either (1) by ballot; (2) by ayes and noes, or (3) by the rising or dividing of the electors, as the electors may determine.

§ 412. **Pound-master's fees.** The pound-masters shall be allowed the following fees for their services, to wit: For taking into the pound and discharging therefrom every horse, mule and head of cattle, fifteen cents; for every other beast, ten cents.

CHAPTER 712. LAWS OF 1913.

AN ACT making an appropriation for the organization and support of county farm bureaus in the various counties of the state.

Section 1. The sum of twenty-five thousand dollars (\$25,000), or so much thereof as may be necessary, is hereby appropriated out of any moneys in the state treasury not otherwise appropriated for the purpose of assisting in the organization and contributing toward the support of county farm bureaus in the various counties of the state and in the supervision thereof by the commissioner of agriculture; provided, however, that no farm bureau shall receive more than six hundred dollars (\$600) per annum toward its support and maintenance in any county of the state, and no such bureau shall be entitled to receive any money appropriated by this act unless the county in which the same is organized shall appropriate through its board of supervisors or otherwise raise and provide at least six hundred dollars (\$600) per annum in support thereof.

§ 2. The commissioner of agriculture is hereby authorized to make rules and regulations for the organization of such county farm bureaus and the moneys hereby appropriated are to be paid by the state treasurer on the warrant of the comptroller on vouchers and certificates approved by the commissioner of agriculture.

CHAPTER 731, LAWS OF 1913.

AN ACT to provide for the compilation of certain data by the commissioner of agriculture, relative to state lands, and making an appropriation therefor.

Section 1. The commissioner of agriculture is hereby authorized and directed to make an examination, appraisal and report of all farm lands outside of the forest preserve heretofore acquired by the state by tax sales and the foreclosure of mortgages by the state loan commissioners. Such examination, appraisal and report shall be completed in detail and filed in the office of the commissioner before January first, nineteen hundred and fourteen. The report shall show the location of each tract or parcel of land, its description with common certainty, a description of the buildings and fences thereon and their condition, the kind and quantity of timber thereon, the commissioner's opinion as to the adaptability thereof to specified crops and his estimate of its actual market value. Such report shall also state which tracts, if any, should, in the opinion of the commissioner, be held by the state and reforested, and which of them are available and suitable for experimental use by agricultural colleges and schools or available for use by any of the public institutions of the state, and which of them should be sold. The commissioner may employ agents and appraisers in the prosecution of such work and incur necessary expenses, within the amount of the appropriation made by this act.

§ 2. The sum of five thousand dollars (\$5,000), or so much thereof as may be necessary, is hereby appropriated out of any moneys in the treasury not otherwise appropriated for the purposes set forth in section one of this act, to be paid by the state treasurer on the warrant of the comptroller upon vouchers approved by the commissioner of agriculture.

SECTIONS 2 AND 70 OF THE LABOR LAW.

Chapter 36 of the Laws of 1909 being chapter 31 of the Consolidated Laws as amended by the Laws of 1913.

§ 2. **Definitions.** Employee. The term "employee," when used in this chapter, means a mechanic, workingman or laborer who works for another for hire.

Employer. The term "employer," when used in this chapter, means the person employing any such mechanic, workingman or laborer, whether the owner, proprietor, agent, superintendent, foreman or other subordinate.

Factory; work for a factory. The term "factory," when used in this chapter, shall be construed to include any mill, workshop, or other manufacturing or business establishment and all buildings, sheds, structures or other places used for or in connection therewith, where one or more persons are employed at labor, except power houses, barns, storage houses, sheds and other structures used in connection with railroad purposes, other than construction or repair shops, subject to the jurisdiction of the public service commission under article three of the public service commissions law. Work shall be deemed to be done for a factory within the meaning of this chapter whenever it is done at any place, upon the work of a factory or upon any of the materials entering into the product of the factory, whether under contract or arrangement with any person in charge of or connected with such factory directly or indirectly through the instrumentality of one or more contractors or other third persons.

Factory building. The term "factory building," when used in this chapter, means any building, shed or structure which, or any part of which, is occupied by or used for a factory.

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§ 70. **Employment of minors.** No child under the age of fourteen years shall be employed, permitted or suffered to work in or in connection with any factory in this state, or for any factory at any place in this state. No child between the ages of fourteen and six-

teen years shall be so employed, permitted or suffered to work unless an employment certificate, issued as provided in this article, shall have been theretofore filed in the office of the employer at the place of employment of such child. Nothing herein contained shall prevent a person engaged in farming from permitting his children to do farm work for him upon his farm. Boys over the age of twelve may be employed in gathering produce, for not more than six hours in any one day, subject to the requirements of chapter twenty-one of the laws of nineteen hundred and nine, entitled "An act relating to education, constituting chapter sixteen of the consolidated laws," and all acts amendatory thereof. (*As amended by chapter 529 of the Laws of 1913.*)

**SECTIONS 5-a, 7, 9, 16, 16-a, 16-b, 17, 17-a, 17-b, 17-c, 18, 18-a, 253,
254, 255, 391 AND 392 OF THE GENERAL BUSI-
NESS LAW RELATING TO WEIGHTS
AND MEASURES:**

Chapter 25 of the Laws of 1909 being chapter 20 of the Consolidated Laws as amended by the Laws of 1913.

§ 5-a. **Bottles or jars for milk and cream.** Bottles used for the sale of milk and cream shall be of the capacity of half gallon, three pints, one quart, one pint, half pint and one gill, filled full to the bottom of the cap ring or stopple. The following variations on individual bottles or jars may be allowed: six drams above and six drams below on the half gallon; five drams above and five drams below on the three pint; four drams above and four drams below on the quart; three drams above and three drams below on the pint; two drams above and two drams below on the half pint, and two drams above and two drams below on the gill. Bottles or jars used for the sale of milk shall have clearly blown, or otherwise permanently marked, in the sides or bottom of the bottle the name, initials or trademark of the manufacturer and a designating number, which designating number shall be different for each manufacturer and may be used in identifying the bottles. The designating number shall be furnished by the state superintendent of weights and measures upon application by the manufacturer, and a record of the designating numbers and to whom furnished shall be kept in the office of the superintendent of weights and measures.

§ 7. **Measure for bran.** The standard measure of capacity for bran and shorts shall be forty quarts to the bushel. The measure used for measuring such commodities shall be round, with a plain or even bottom, and it shall be thirteen and one-half inches in diameter in the clear at the top, and fifteen inches and one-half in diameter in the clear at the bottom, and of sufficient depth to contain such number of quarts, when stricken with a round, straight stick or roller of uniform diameter.

§ 9. **Barrels of apples, quinces, pears and potatoes.** A barrel of pears, quinces or potatoes shall represent a quantity equal to one

hundred quarts of grain or dry measure. A barrel of apples shall be of the following dimensions: head diameter, seventeen and one-eighth inches; length of stave, twenty-eight and one-half inches; bulge, not less than sixty-four inches outside measurement, to be known as the standard apple barrel. Or where the barrel shall be made straight or without a bulge, it shall contain the same number of cubic inches as the standard apple barrel. Every person buying or selling apples, pears, quinces or potatoes in this state by the barrel, shall be understood as referring to the quantity or size of the barrel, specified in this section, but when potatoes are sold by weight, the quantity constituting a barrel shall be one hundred and seventy-four pounds. No person shall make, or cause to be made, barrels holding less than the quantity herein specified, knowing or having reason to believe that the same are to be used for the sale of apples, quinces, pears or potatoes, unless such barrel is plainly marked on the outside thereof with the words "short barrel" in letters of not less than one inch in height. No person in this state shall use barrels hereafter made for the sale of such articles of a size less than the size specified in this section. Every person violating any provision of this section shall forfeit to the people of this state a sum of five dollars for every barrel put up or made or used in violation of such provision.

§ 16. **Method of sale of certain commodities.** All meat, meat products and butter, shall be sold or offered for sale by weight. All other commodities not in containers shall be sold or offered for sale by standard weight, standard measure or numerical count, and such weight, measure or count shall be marked on a label or a tag attached thereto; provided, however, that vegetables may be sold by the head or bunch. (*As added by chapter 81 of the Laws of 1912.*)

§ 16-a. **Certain sizes of containers when used for vegetables, produce and fruit prescribed.** No person shall manufacture, sell, offer or expose for sale containers for vegetables, produce or fruit that are not of the capacity of one barrel, half-barrel, one bushel, or multiples of the barrel or sub-multiples of the bushel divisible by two; provided, however, that fruits, vegetables and produce may

be sold in other sized containers if the net capacity in terms of standard dry measure is plainly and conspicuously marked, branded or otherwise indicated in the English language on the outside or top thereof, or is marked in accordance with the provisions of section seventeen. A barrel within the meaning of this and the ensuing sections of this article shall represent a quantity equal to seventy hundred and fifty-six cubic inches or conform to the following dimensions: Head diameter, seventeen and one-eighth inches; length of stave, twenty-eight and one-half inches; bilge not less than sixty-four inches outside measurement; distance between heads not less than twenty-six inches; and to be known as a standard barrel. A reasonable variation of the capacity specified shall be allowed. (*As added by chapter 81 of the Laws of 1912.*)

§ 16-b. **Standard grape basket.** The standard four-pound grape basket shall be of the following dimensions:

The bottom shall be three and five-eighths inches in width and nine and five-eighths inches in length; the height shall be four and one-quarter inches; the outside of the top shall be five inches in width and eleven inches in length, requiring a cover of five inches by eleven inches. The standard eight-pound grape basket shall be of the following dimensions: The bottom shall be four and three-fourths inches in width and twelve and one-fourth inches in length; the height shall be five and one-eighth inches; the outside of the top shall be six and one-half inches in width and fourteen and one-half inches in length, requiring a cover of six and one-half by fourteen and one-half inches. The standard twenty-pound basket shall be of the following dimensions: The bottom shall be seven and one-eighth inches in width and fifteen inches in length; the height shall be six and three-fourths inches; the outside of the top shall be nine and one-half inches in width and eighteen inches in length, requiring a cover of nine and one-half inches by eighteen inches. Any container complying with such dimensions and capacity need not be marked, tagged or otherwise branded, to indicate the net quantity of the contents, or to specify the same in terms of weight, measure or numerical count. No person shall manufacture, sell, offer or expose for sale, containers for grapes or other fruit, in this state, as the standard four-pound grape basket

or the standard eight-pound grape basket, which are of less dimensions than those specified in this section, unless the net quantity of the contents of each container or a statement that the specified weight includes the container, the weight of which shall be marked, shall be plainly and conspicuously marked, branded or otherwise indicated on the side of such container, in terms of weight, measure or numerical count. (*As amended by chapter 426 of the Laws of 1913.*)

§ 17. **Net contents of containers to be indicated on the outside thereof.** When commodities are sold or offered for sale in containers of other sizes than those specified in section sixteen-a or whose sizes are not otherwise provided by statute, the net quantity of the contents of each container, or a statement that the specified weight includes the container, the weight of which shall be marked, shall be plainly and conspicuously marked, branded or otherwise indicated on the outside or top thereof or on a label or a tag attached thereto in terms of weight, measure or numerical count; provided, however, that reasonable variations shall be permitted. (*As added by chapter 81 of the Laws of 1912.*)

§ 17-a. **When sections sixteen, sixteen-a and seventeen shall not apply.** Sections sixteen, sixteen-a and seventeen shall not apply to containers or commodities in containers with ornamentations or decorations exclusively for gifts or social favors, or to commodities dispensed for consumption on the premises, or to commodities or containers put in receptacles used merely for the purpose of carrying or delivering of commodities or containers complying with the provisions of such sections, or when the numerical count of the individual units is six or less, or in the case of liquids when the contents is two fluid ounces or less, or when the weight of the contents is three avoirdupois ounces or less, or to commodities packed, put up or filled prior to eight months after this section takes effect, or to barrels, half barrels, quarter barrels, casks, kegs and packages used for the purpose of containing maltous beverages; or to bottles used for the purpose of the bottling of spirituous, maltous, vinous, or carbonated beverages until two years after this section takes effect. (*As amended by chapter 514 of the Laws of 1913.*)

§ 17-b. Guaranty furnished by wholesaler, jobber or manufacturer.

No person shall be prosecuted under the provisions of this article, following section fifteen thereof, when he can show a guaranty signed by a wholesaler, jobber or manufacturer, residing in the state of New York from whom he purchased the commodity in containers to the effect that they were not incorrectly marked within the meaning of such sections of this article. The person making the sale and guaranty shall then be amenable to the prosecution, fines, and other penalties which would in due course attach to the dealer under the provisions of such sections. The name appearing on the container and the marking as provided by section seventeen shall be deemed to constitute a guaranty. (*As added by chapter 81 of the Laws of 1912.*)

§ 17-c. Definition of terms "container" and "person."

"A container" as used in this article, following section fifteen thereof, shall include any carton, box, crate, barrel, half-barrel, hamper, keg, drum, jug, jar, crock, bottle, bag, basket, pail, can, wrapper, parcel or package. "A person" as used in such sections shall be considered to import both the singular and the plural and shall include corporations, companies, societies and associations, and whether acting through an agent or servant. (*As added by chapter 81 of the Laws of 1912.*)

§ 18. Examination and prosecution.

The examination of the weight, measure or numerical count of the contents of containers as provided by section seventeen shall be made by the state superintendent of weights and measures or under his supervision or direction by any of the weights and measures officials of the state; except that in the city of New York such examination shall be made by the commissioner of the mayor's bureau of weights and measures of the city of New York. When after such examination there is cause to believe that a provision of section seventeen has been intentionally violated the state superintendent of weights and measures shall, after notifying in writing the person so accused of such accusation, certify the results to the attorney-general with a copy of the results of the examination duly authenticated under oath by the official making examination. The attorney-general

shall cause appropriate proceedings in the name of the people of the state of New York to be commenced and prosecuted in the proper courts of the state without delay for the enforcement of the penalties therefor; except that in the city of New York the commissioner of the mayor's bureau of weights and measures shall in cases where he acts, after notifying in writing the person so accused of such accusation certify the result to the attorney-general, with a copy of the result of the examination duly authenticated under oath by the official making such accusation. Such attorney-general shall cause appropriate proceedings in the name of the people of the state of New York to be commenced and prosecuted in the courts of the state of New York without delay for the enforcement of the penalties therefor. The state superintendent of weights and measures with the co-operation of the chief or principal weights and measures officials of the cities of the first class shall establish uniform tolerances or amounts of reasonable variation and shall make uniform rules and regulations for carrying out the provisions of sections sixteen, sixteen-a, seventeen, seventeen-a and seventeen-b. (*As added by chapter 81 of the Laws of 1912.*)

§ 18-a. **Penalties.** A person violating any of the provisions of sections sixteen, sixteen-a, sixteen-b, seventeen, seventeen-b, shall be punished by a fine of not less than twenty-five dollars nor more than one hundred dollars for the first and second violations, and by a fine of not less than one hundred dollars nor more than five hundred dollars for subsequent violations. (*As amended by chapter 426 of the Laws of 1913.*)

§ 253. **Presser of hay and straw defined; correct scales to be used; bales to be marked.** The term "presser" as used in this and the following sections of this article shall mean the person, firm, association or corporation owning or having possession and operating the hay press. A presser who presses hay or straw for market shall use correct scales, properly sealed. Every presser of hay or straw for market shall mark each bale of any of such commodities pressed by him with his name and business address and the correct weight of the bale. These markings shall be made

upon a tag, securely fastened to the bale, of not less than one and one-half inches in width and three inches in length.

A person violating this section shall forfeit to the people of the state the sum of five dollars for each such violation. (*As amended by chapter 96 of the Laws of 1913.*)

§ 254. **Prohibition against the adulteration of hay.** No person shall put or conceal in any such bundle of hay any wet or damaged hay, or other materials, or hay of any inferior quality to that which plainly appears upon the outside of such bundle.

A person violating this section shall forfeit to the people of the state the sum of five dollars for each such violation.

§ 255. **Weight to be marked on bale.** The gross weight shall be plainly marked on each bale of hay or straw sold or offered for sale in this state; and no baled hay or straw shall be so sold or offered for sale which weighs less than such gross weight after deducting five pounds from such bale for shrinkage. And no baled hay or straw shall be so sold or offered for sale with more than twenty pounds of wood to the bale, the weight of which is two hundred pounds or upward, or more than ten pounds of wood for bales weighing less than two hundred pounds.

A person violating any provisions of this section shall forfeit to the people of the state the sum of five dollars for each such violation.

§ 391. **Penalties for marketing small fruits or baskets or selling fruit therein.** Any person in this state who sells or offers for sale fruit packages that are of less than the standard sizes and capacity as defined in section five, or any person who sells or offers for sale fruit in packages that are of less size or capacity than those defined in section five, shall be deemed guilty of a misdemeanor and upon conviction thereof in any court of competent jurisdiction shall be fined not less than five dollars and not more than twenty-five dollars, for each violation and each sale shall constitute a separate violation, but a variation of not more than seven per centum shall not be deemed a violation under this section. (*As amended by Laws of 1909.*)

§ 392. **Repacking fruit and farm produce.** A person, firm or association who purchases fruit or farm produce in barrels, boxes or other packages, and empties, or causes to be emptied, such barrels, boxes or other packages, and repacks, or causes to be repacked therein the same or other fruit or farm produce, shall, before any such repacked barrel, box or other package is sold, or offered or exposed for sale, erase or otherwise obliterate the name of the grower or producer, if found thereon. Every such person, firm or association selling, or offering or exposing for sale fruit or farm produce which has been emptied from and repacked in the barrels, boxes or other packages in which they were purchased, without erasing or otherwise obliterating the name of the grower or producer of such fruit or farm produce, if found thereon, as above provided, shall be subjected to a penalty of fifty dollars for each barrel, box or other package of fruit or farm produce so sold, offered or exposed for sale.

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